



**Daffodil**  
*International*  
**University**

## **Faculty of Engineering**

Department of Textile Engineering

### **Thesis Topic**

**Study on the Quality Control of Garments Sewing  
section**

**Course Title: Project (Thesis)**

**Course Code: TE 4214**

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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**

**Fall 2024**

## DECLARATION

I declare that all content contained herein is my original work, with the exception of explicitly referenced material from other sources. I affirm that this report has not been submitted for assessment in any prior academic course. The examiner/supervisor retains the authority to rescind this report in the event of any breach of this declaration.

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Name:

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# **Faculty of Engineering**

## **Department of Textile Engineering**

### **Approval Sheet**

This document certifies that the thesis entitled "Study on the Quality Control of Garments Sewing Inspection," submitted by Safia Islam (Student ID: 192-23-720) to the Department of Textile Engineering, Faculty of Engineering, Daffodil International University of Textiles, is a true and accurate representation of the research and findings of the author.



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Associate Professor  
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## ACKNOWLEDGEMENT

First and foremost, I would like to express our sincere gratitude to the Almighty Allah for bestowing us with the strength, knowledge, and opportunity to undertake and complete this project successfully. I'm deeply indebted to **Md. Abdullah Al Mamun**, an esteemed Assistant Professor in the Department of Textile Engineering at Daffodil International University. His invaluable guidance, insightful criticism, and unwavering support were instrumental in shaping this project. His extensive knowledge and experience in the field of Quality Control of Garments Inspection Attachment have been a constant source of inspiration and learning. I am truly fortunate to have had the opportunity to learn from such a knowledgeable and dedicated mentor.

I would also like to extend our heartfelt thanks to my friends for their invaluable assistance and support throughout the duration of this project.

I acknowledge that this project would not have been possible without the collective efforts of all those mentioned above. I am truly grateful for their contributions and hope to continue learning from and collaborating with them in the future.

# **DEDICATION**

I would like to express my sincere gratitude to my parents, whose unwavering support and encouragement have enabled me to pursue my studies in textile engineering. I dedicate this report to them, especially to Mr. Nafiw Uddin, Merchandiser at Esquire Knit Composite Plc.

I'm also deeply grateful to my friends, whose invaluable assistance and constant support have been instrumental in the completion of this report.

## ABSTRACT

The garment industry, a cornerstone of global trade, depends heavily on stringent quality control measures to ensure customer satisfaction and maintain brand reputation. This study examines the critical role of sewing inspection within quality control, identifying key areas for improvement and proposing innovative solutions to address prevalent challenges.

Utilizing a mixed-methods research design, the study combines theoretical frameworks with empirical research. Surveys, interviews, and observations conducted with industry experts, quality control personnel, and production workers provide insights into current practices and challenges. Statistical analysis of defect data reveals patterns and trends, leading to actionable recommendations.

The findings highlight several key areas for improvement. First, effective training and skill development for sewing operators are crucial in reducing defects. Second, the adoption of advanced inspection technologies, such as automated defect detection systems, can significantly enhance the accuracy and efficiency of quality control processes. Third, the implementation of a multi-layered inspection process—comprising in-line, final, and audit inspections—has been shown to reduce defect rates and improve product consistency. Lastly, regular performance monitoring and feedback mechanisms are essential to sustaining high-quality standards and fostering continuous improvement.

These insights contribute to the enhancement of garment quality, offering practical strategies to improve production processes. Beyond the garment industry, the findings provide valuable implications for other manufacturing sectors that rely on intricate assembly processes, ultimately advancing consumer satisfaction and strengthening industry reputation.

From the summary of the collected data table I got the defects percentage, this visualization highlights the defect count for each defects, with "Broken stitch" having the highest total defects (14.75%) and "Open seam" (13.1%) and "needle cut" having the lowest (3,27 %).

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# **CHAPTER-I**

## **INTRODUCTION**

## **1.1 Introduction:**

The garment industry, a cornerstone of the global economy, relies heavily on stringent quality control measures to ensure the production of high-quality products. Among the various stages of garment manufacturing, sewing inspection plays a crucial role in identifying and rectifying defects before the final product reaches the consumer. The importance of effective sewing inspection cannot be overstated, as it directly impacts the brand reputation, customer satisfaction, and overall profitability of a garment manufacturing enterprise.

In recent years, the garment industry has witnessed significant growth and diversification. However, this growth has also brought about numerous challenges, including increasing competition, evolving consumer preferences, and stringent quality standards. To maintain a competitive edge, garment manufacturers must prioritize quality control throughout the entire production process. This thesis aims to delve into the intricacies of quality control in garment sewing inspection, exploring the various factors that influence its effectiveness and identifying potential areas for improvement.

## **1.2 Objectives:**

1. Identify and analyze the current state of quality control practices in garment sewing inspection: This involves understanding the existing methods, tools, and procedures used to identify and rectify defects during the sewing process.
2. Evaluate the effectiveness of current quality control measures: Assess the ability of the current system to ensure consistent product quality, minimize defects, and meet customer expectations.
3. Identify the root causes of common sewing defects: Pinpoint the underlying factors that contribute to the occurrence of specific defects in the sewing process.
4. Propose recommendations for improving quality control practices: Develop practical strategies and solutions to enhance the efficiency and effectiveness of quality control processes.
5. Develop a framework for a robust quality control system: Create a comprehensive framework that outlines the key elements of an effective quality control system, including inspection procedures, documentation, and training.
6. Assess the impact of technological advancements on quality control: Explore the potential of emerging technologies, such as automation and AI, to improve the accuracy and efficiency of garment sewing inspection.

## **1.3 Scopes:**

This study will primarily focus on the quality control practices employed in sewing inspection within garment manufacturing units. The scope of the research will encompass the following key areas:

1. Sewing Inspection Process: A detailed examination of the various stages involved in sewing inspection, including pre-inspection, in-process inspection, and final inspection.

2. **Quality Control Tools and Techniques:** An analysis of the tools and techniques utilized in sewing inspection, such as checklists, visual inspection, and statistical process control (SPC).
3. **Common Defects and Their Causes:** Identification of the most prevalent defects in garment sewing and an investigation of the underlying factors contributing to their occurrence.
4. **Impact of Quality Control on Garment Manufacturing:** An assessment of the impact of effective quality control on various aspects of garment manufacturing, including productivity, efficiency, and customer satisfaction.
5. **Challenges and Limitations of Quality Control in Sewing Inspection:** A critical examination of the challenges and limitations faced by garment manufacturers in implementing and maintaining effective quality control practices.

#### **1.4 Limitations**

1. **Scope and depth of research:** The scope of the study may be limited by factors such as time constraints, access to relevant data, and the availability of participants for interviews or surveys.
2. **Generalizability of findings:** The findings of the study may not be fully generalizable to all garment manufacturing settings due to variations in production processes, organizational structures, and quality control practices.
3. **Subjectivity of data collection:** Data collection methods, such as interviews and observations, may be subject to biases and interpretations by the researcher.
4. **Limitations of existing data:** The reliability and accuracy of existing data on garment sewing defects and quality control practices may be limited by factors such as data quality, completeness, and consistency.
5. **Rapidly evolving industry trends:** The garment industry is constantly evolving, and new technologies and practices may emerge during the course of the study, potentially impacting the relevance of certain findings.

**CHAPTER-II**  
**LITARETURE REVIEW**

## **2. Quality Control in Garment Manufacturing**

### **2.1. Introduction to Quality Control in Garment Manufacturing**

Quality control (QC) is crucial in the garment industry to meet both customer expectations and regulatory standards. The garment industry faces challenges in maintaining consistent quality in mass production due to variable factors such as fabric type, sewing technique, machine calibration, and worker skill levels.

### **2.2. Importance of Sewing Inspection in Garment Manufacturing**

Sewing inspection is a critical stage in garment production, directly affecting the product's final quality. Proper inspection ensures that the stitching, trims, and assembly meet specified standards, minimizing defects such as thread breaks, uneven stitching, and misalignment.

### **2.3. Methods of Sewing Inspection**

Several methodologies exist for sewing inspection, including:

- Visual Inspection: Inspectors manually check the garment for defects.
- Automated Inspection Systems: Advanced technologies such as vision systems and robots that use cameras and sensors to detect defects.
- Statistical Process Control (SPC): Utilizes statistical tools to monitor and control the sewing process quality.

### **2.4. Common Defects in Garment Sewing**

Defects such as seam puckering, needle damages, fabric distortion, and stitching irregularities are often encountered during the sewing process. Research has focused on identifying the causes of these defects and proposing solutions.

### **2.5. Inspection Systems and Techniques**

Studies highlight various inspection systems employed in garment manufacturing, from manual inspections by human operators to computer-aided inspection systems. Recent

innovations focus on real time monitoring and feedback systems integrated with production machinery.

## **2.6. Challenges in Garment Sewing Inspection**

Challenges in garment sewing inspection are multifaceted:

- **Human error:** Human inspectors may miss subtle defects or incorrectly categorize them.
- **Skill Variability:** Different levels of skill among sewing operators lead to inconsistencies in garment quality.
- **Complexity of Garment Designs:** Complex garment designs with intricate stitching patterns make the inspection process more difficult.
- **Lack of Standardization:** Variations in inspection criteria and methods among factories can lead to inconsistent quality control results.

## **2.7. Technological Innovations in Sewing Inspection**

The application of modern technologies, such as machine learning, artificial intelligence, and Internet of Things (IoT), has significantly transformed the garment quality control landscape. These technologies enable more accurate and faster defect detection, reducing the chances of human error.

## **2.8. Quality Control Frameworks**

Some research proposes structured frameworks for implementing quality control in garment sewing, which include:

- **Total Quality Management (TQM):** Focuses on continuous improvement and quality at every stage of production.
- **Six Sigma:** A data-driven methodology that aims to reduce defects and improve quality by minimizing variation in the manufacturing process.

## 2.9. Selected Factory

A comprehensive study was conducted at Esquire Knit Composite Limited and Interstroff Group, renowned garment manufacturers. The research delved into the intricate aspects of garment quality control and inspection processes. To gather accurate data, on-site observations were carried out at their production facilities. Detailed information was collected on various parameters, including fabric construction, dyeing techniques, finishing processes, and quality assurance measures. By analyzing these data points, the study aimed to identify potential areas for improvement in quality control and inspection practices, ultimately leading to enhanced product quality and customer satisfaction.

## 2.10. Key elements of Garments Quality Control & Inspection

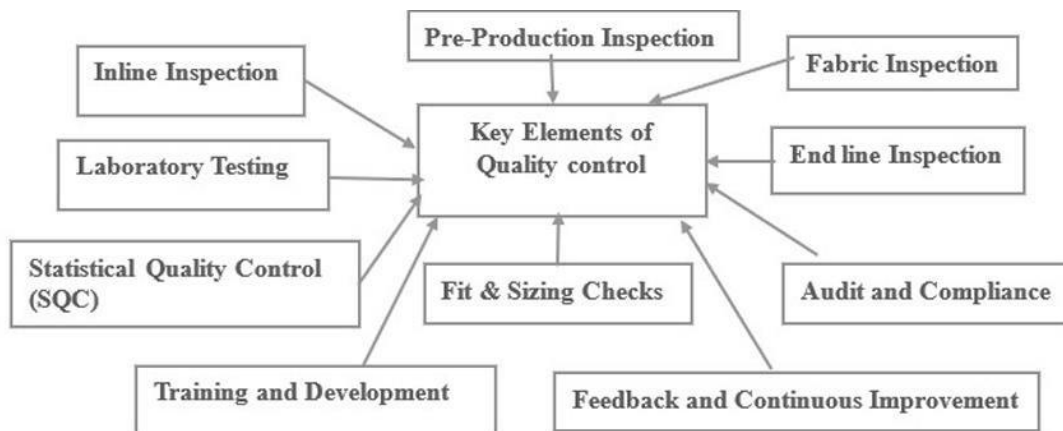


Fig 2.1: Key elements of Garments Quality Control & Inspection

This Figure presents a comprehensive overview of the various components that contribute to effective quality control within a manufacturing or production setting.

These elements work together to ensure the consistency, reliability, and overall excellence of the final product.

#### 1. Pre-Production Inspection

- **Fabric Inspection:** This initial stage involves scrutinizing the raw materials, particularly the fabric, for any defects, inconsistencies, or deviations from the specified quality standards. This ensures that the foundation for the product is sound.
- **Laboratory Testing:** In this step, the raw materials undergo rigorous testing in a laboratory environment to assess their physical and chemical properties. This helps identify any potential issues early on and ensures that the materials meet the required specifications.

#### 2. Inline Inspection

- **Statistical Quality Control (SQC):** This involves the application of statistical methods to monitor and control the quality of the production process. By analyzing data collected during production, SQC helps identify trends, potential problems, and areas for improvement.
- **Fit & Sizing Checks:** Throughout the production process, regular checks are conducted to ensure that the product's fit and sizing conform to the established standards. This prevents any variations that could compromise the final product's quality.

#### 3. End-line Inspection

- **Inline Inspection:** As the product nears completion, it undergoes final inspection to verify that it meets all quality criteria. This includes checking for defects, proper assembly, and adherence to specifications.
- **Audit and Compliance:** This stage involves assessing the entire production process against established quality standards and regulatory requirements. Audits help identify areas for improvement and ensure compliance with industry best practices.

#### 4. Feedback and Continuous Improvement

- **Training and Development:** Ongoing training and development programs are essential for maintaining a skilled workforce and promoting a culture of quality. This ensures that employees are equipped with the knowledge and skills to consistently deliver high-quality products.
- **Feedback and Continuous Improvement:** Gathering feedback from customers, employees, and other stakeholders is crucial for identifying areas for improvement. By analyzing this feedback, organizations can implement changes to enhance their quality control processes and ultimately deliver better products.

## **2.11. Quality Control of Apparel Industry**

### **Pre-Production**

This stage focuses on preparing for the actual production process. Key steps include:

1. **Prototype and Sample Evaluation:** Creating a prototype or sample garment to assess design, fit, and material quality.
2. **Material Inspection:** Checking the raw materials like fabric, thread, and trims for defects, color consistency, and adherence to specifications.
3. **Measurement Verification:** Ensuring that all measurements for different garment sizes are accurate and consistent.
4. **Construction and Sewing Verification:** Verifying the construction techniques and sewing quality to meet industry standards.
5. **Fit Testing:** Conducting fit tests on samples to ensure they fit well on various body types.
6. **Pattern and Grading:** Creating accurate patterns and grading them for different sizes.
7. **Technical Package Verification:** Reviewing the technical package, which includes detailed specifications and instructions for production.
8. **Production Planning and Workflow Assessment:** Planning the production process and assessing the workflow for efficiency.
9. **Pilot Run Evaluation:** Conducting a small-scale production run to identify and address any issues before full-scale production.

10. Compliance and Safety Checks: Ensuring that the production process and materials comply with safety and regulatory requirements.

#### In-Line Process

This stage focuses on quality control during the actual production process. Key steps include:

1. Raw Material Inspection: Re-inspecting the raw materials before cutting to ensure consistency.
2. Cutting Inspection: Checking the cut fabric pieces for defects and accuracy.
3. Sewing and Assembly Inspection: Monitoring the sewing process and checking for correct stitching, assembly, and adherence to specifications.
4. In-Line Inspection: Conducting regular inspections throughout the production process to identify and rectify any defects.
5. Process Verification: Ensuring that all production processes are being followed correctly.
6. Measurement and Fit Checks: Verifying measurements and fit of garments during production.
7. Appearance and Aesthetic Inspection: Checking the overall appearance and aesthetics of the garments.
8. Functional Testing: Testing the functionality of zippers, buttons, and other components.
9. End-of-Line Inspection: Conducting a final inspection of completed garments before packaging.
10. Documentation and Reporting: Documenting all quality control activities and generating reports for analysis.
11. Training and Skill Development: Providing training to production staff to improve their skills and knowledge.
12. Feedback Loop: Continuously gathering feedback and implementing improvements to the quality control process.

#### Post-Production Process

This stage focuses on quality control after the production process is complete. Key steps include:

1. Final Production Inspection: Conducting a final inspection of all completed garments before shipment.
2. Measurement and Fit Verification: Re-verifying measurements and fit of the final garments.
3. Packaging and Labelling Checks: Ensuring that garments are properly packaged and labeled.
4. Functional Testing: Re-testing the functionality of zippers, buttons, and other components.
5. Compliance and Safety Verification: Re-checking for compliance with safety and regulatory requirements.
6. Documentation and Reporting: Documenting all post-production quality control activities and generating reports.
7. Sample Inspection and Shipment: Inspecting samples before shipment to ensure they represent the quality of the entire production.
8. Feedback and Continuous Improvement: Gathering feedback from customers and implementing improvements to the quality control process.

Overall, the quality control process in the apparel industry involves a comprehensive system of checks and inspections throughout the entire production process. This helps ensure that the final products meet quality standards, customer expectations, and regulatory requirements.

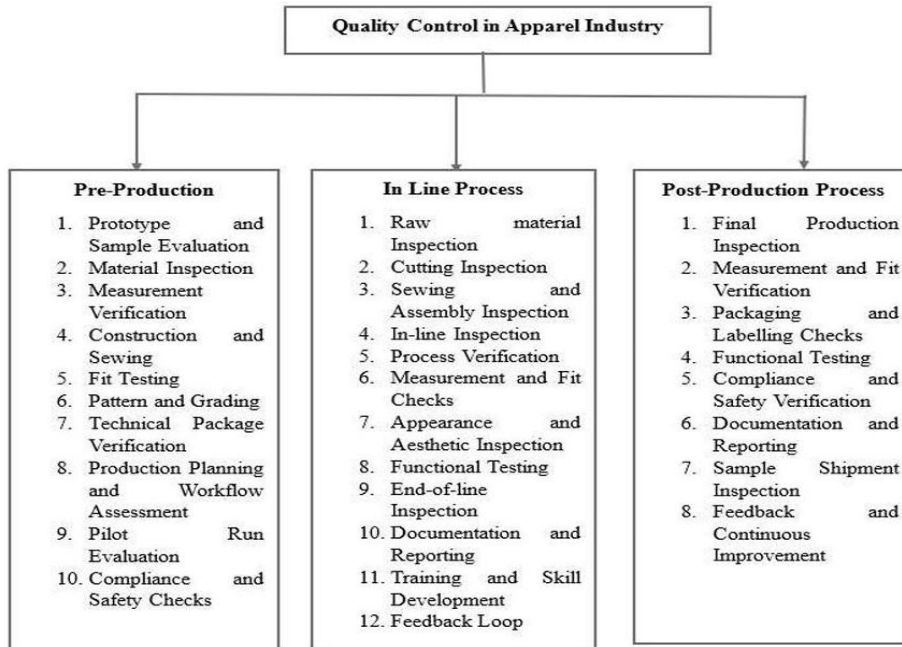


Fig 2.2: Quality Control in Apparel Industry

**CHAPTER-III**  
**METHODOLOGY**

### **3.1. Data Collection**

Thesis Design: A mixed-methods approach will be employed, combining quantitative and qualitative research techniques.

Data Collection Methods:

1. Qualitative Research:

Researchers will observe the sewing inspection process in selected garment factories to gain firsthand insights into practices, challenges, and improvement opportunities.

Relevant documents will be analyzed to identify gaps and inconsistencies in quality control practices. The collected data will be summarized and identify the major defects causes and their remedies.

2. Ethical Considerations:

- a. Informed consent will be obtained from all participants.
- b. Confidentiality and anonymity of participants will be maintained.
- c. Ethical guidelines will be followed throughout the research process

### 3.2. Report on sewing Quality

#### 3.2.1. production record sheet for a sewing operation

# OF PCS	CYCLE PER PC	CUM TIME	LOST TIME				# OF PCS	CYCLE PER PC	CUM TIME	LOST TIME				REMARKS
			M/C	MST	WTN	PER				M/C	MST	WTN	PER	
1	27.34	27.34					41	33.20						
2	33.78	1:01.12					42	26.09						
3	27.34	1:28.46					43	28.28						
4	32.27	2:01.13 min					44	29.00						
5	27.93						45	29.17						
6	34.67						46	26.98						
7	55.71			15s			47	35.88						
8	29.09						48	29.63						
9	37.74		5s				49	33.80						
10	31.49						50	26.08						
11	28.76						51	33.80						
12	31.18						52	26.70	30:16:50					
13	30.67						53							
14	33.57						54							
15	37.93			4s			55							
16	31.40						56							
17	34.60						57							
18	29.25						58							
19	33.47						59							
20	31.84						60							
21	44.11			12s			61							
22	30.08						62							
23	28.44						63							
24	27.08						64							
25	28.45						65							
26	33.95						66							
27	46.38			25s			67							
28	29.43						68							
29	30.58						69							
30	34.60						70							
31	38.85					5s	71							
32	34.27						72							
33	29.71						73							
34	25.33						74							
35	33.21						75							
36	27.93			1.35s			76							
37	24.71						77							
38	25.20						78							
39	25.68						79							
40	1:10.36			44s			80							
Total Time		30.275 min				Industrial Engineer								
Total Lost Time		2.91 min				Line Chief								
		27.36 min				Operator								

This is a production record sheet for a sewing operation, specifically labeled as "Label Attach." I'll analyze the data based on the provided columns, including cycle time, lost time categories, and cumulative performance.

Key Observations and Analysis:

1. Cycle Time Analysis:

- The cycle time per piece varies significantly, ranging between 25.06 seconds and 37.34 seconds. This variability indicates inconsistency in operator performance or possible interruptions.

2. Output and Performance:

- The standard machine value (SMV) is 0.45 minutes (27 seconds per piece). Several cycles exceed this target, affecting productivity and efficiency.
- The improved output target is set at 104 pieces per hour. With a 90-minute time frame (2:30 PM to 4:00 PM), the total target output should be approximately 156 pieces. However, the recorded data does not show a total that meets or exceeds this output target.

3. Lost Time:

- Breakdown:
  - Machine-Related (M/C): Several entries indicate machine-related stoppages, with significant lost time highlighted in cycles 5 (155 seconds), 15 (45 seconds), and 36 (135 seconds).
  - Mistakes (MST): Errors causing delays are logged in cycles 8 (55 seconds), 31 (55 seconds), and 27 (245 seconds). These indicate training or process issues requiring attention.
  - Waiting (WTN): The longest wait time appears in cycle 21 (128 seconds). Waiting may be due to bottlenecks or dependency on preceding processes.
  - Personal (PER): No lost time due to personal reasons is recorded, which shows discipline among workers but doesn't necessarily explain lost productivity.

4. Aggregate Lost Time:

- Total Lost Time: 2.91 minutes.
- Effective Working Time: This is 30.275 minutes out of the total possible 90 minutes. This implies a significant gap between planned and actual productive time.

5. Remarks:

- Comments in the remark's column highlight the critical disruptions, such as bottlenecks or issues during operations that require immediate follow-up to improve future performance.

### 3.2.2. Garments quality control inspection

Submit date: May 18, 2024  
Participant: Tabibur Rahman

#### KNIT & JERSEY - INSPECTION FORM

SUMMARY		Inspected by	
Inspection date	2024-05-18	Order number	Tabibur Rahman
Inspection Type	Inline	820625	
Supplier name	INTERSTOFF APPARELS LTD	Production Unit name	South East Textiles Ltd
Pieces in production (pairs)	5000	Finished pieces (pairs)	2500
Pieces packed in cartons (pairs)	2000	Checked pieces	50
Checked cartons		Fabric cross check	
Reason for fabric failure		Does the production correspond to the approved c/s ?	YES

**TODs**                      **Planning Markets**  
2024-05-20                      PM-CL

**Articles**  
008, 77-102, Blue Dusty Light, null, SPEED - DINO

**Field Tests**

Nickel test	OK
SafeQ test	OK
Moisture check	OK
Measurement test	OK
GSM	OK

Defects	Minor	Major	TOT	Comments
Making/Workmanship	2	1	1	
Uneven buttoning	1			Both leg opening uneven.
Other (Making/Workmanship)	1	1		Both leg gathering uneven.
Finishing	0	1	1	
Loose threads inside garment		1		
<b>TOTAL</b>	<b>2</b>	<b>2</b>	<b>2</b>	

**Defect Comments**

1. Moisture found: 30 to 38.
2. Pair pack S/B even in bulk follow as per C/S properly.
3. Both leg opening & gathering S/B even in bulk follow as per C/S accordingly.
4. Loose thread S/B remove in bulk follow as per guideline.
5. Neck shape S/B nicer in bulk follow as per C/S.

Note : Please take care and rectify above all comments then pack.

Inspection result	ACCEPTED
OK to ship?	
Reason for not OK to ship	
Pieces to ship	

### 3.2.2.1. Summary of Above Data sheet

<b>Item</b>	<b>Value</b>
<b>Inspection Date</b>	<b>5.18.2024</b>
<b>Supplier Name</b>	<b>INTERSTOFF APPARELS LTD</b>
<b>Production Unit</b>	<b>South East Textiles Ltd</b>
<b>Order Number</b>	<b>620625</b>
<b>Pieces in Production (Pairs)</b>	<b>5000</b>
<b>Finished Pieces (Pairs)</b>	<b>2500</b>
<b>Pieces Packed in Cartons (Pairs)</b>	<b>2000</b>
<b>Checked Pieces</b>	<b>50</b>
<b>Checked Cartons</b>	<b>Not Specified</b>
<b>Fabric Cross-Check</b>	<b>Yes</b>
<b>Reason for Fabric Failure</b>	<b>Not Mentioned</b>
<b>Production Corresponds to Approved Orders?</b>	<b>YES</b>

### 3.2.2.2. Field Tests

<b>Test</b>	<b>Result</b>
Nickel Test	OK
SafeQ Test	OK
Moisture Check	OK
Measurement Test	OK
GSM	OK

### 3.2.2.3. Defect Analysis

Category	Minor	Major	Total	Comments
<b>Making/Workmanship</b>	2	1	3	Both leg opening uneven, Uneven buttoning
<b>Other (Making/Workmanship)</b>	1	0	1	Both leg gathering uneven
<b>Finishing</b>	0	1	1	Loose threads inside garment
<b>TOTAL</b>	2	2	2	

#### Defect Comments

1. Moisture found: 30 to 38.
2. Pair pack S/B even in bulk follow as per C/S properly.
3. Both leg opening & gathering S/B even in bulk follow as per C/S accordingly.
4. Loose thread S/B remove in bulk follow as per guideline.
5. Neck shape S/B nicer in bulk follow as per C/S.

#### Inspection Result

- Accepted

### 3.2.3. Garments Quality Inspections Data Analysis

PATTERN TEST/SIZE SET SAMPLE REPORT															QA-04/110		
BUYER: <u>HVM</u>			COLOR: <u>07-197</u>		WASH: <input type="checkbox"/> YES <input type="checkbox"/> NO		DATE: <u>14-10-24</u>			LINE NO: <u>27</u>							
ORDER NO: <u>230022-10</u>			SPIRALITY: <u>(SOLID)</u>				ORDER QTY:			CUT QTY:		TECHNICIAN: <u>ALIM</u>					
ITEM: <u>100% COTTON</u>			PRINT/EMB: <input type="checkbox"/> YES <input type="checkbox"/> NO				SIZE SET QTY:										
FAB TYPE: <u>5/7</u>							SRINKAGE(%):			LENGTH:		WIDTH:					
GSM: <u>REQ</u>			FOUND: <u>(S-1)</u>														
DESCRIPTION		YES	NO	N/A	DESCRIPTION			YES	NO	N/A	DESCRIPTION			YES	NO	N/A	
COUNTER SAMPLE APPROVE					CARE LABEL						OTHER LABEL						
COLOR STANDARD					MAIN LABEL						BUTTON						
MEASUREMENT POINT		SIZE: <u>42</u>			SIZE: <u>48/104</u>			SIZE: <u>48/116</u>			SIZE: <u>122/122</u>			SIZE: <u>124/124</u>			
		SPEC	Before Iron	After Iron	SPEC	Before Iron	After Iron	SPEC	Before Iron	After Iron	SPEC	Before Iron	After Iron	SPEC	Before Iron	After Iron	
Weight		30.5	✓	✓	32.5	✓	✓	31.5	✓	✓	31.5	✓	✓	31.5	✓	✓	
Cotton		30.5	✓	✓	32.5	✓	✓	31.5	✓	✓	31.5	✓	✓	31.5	✓	✓	
Front Length		58	✓	✓	47	✓	✓	47	✓	✓	60	✓	✓	60	✓	✓	
SYL depth		14.5	✓	✓	15.5	✓	✓	16.5	✓	✓	17	✓	✓	17	✓	✓	
PLATEAU BOUTON		26	✓	✓	23.5	✓	✓	23.5	✓	✓	23.5	✓	✓	23.5	✓	✓	
DECK width		15.1	✓	✓	15.5	✓	✓	15.5	✓	✓	15.5	✓	✓	15.5	✓	✓	
DECK Drop front		6.5	✓	✓	6.5	✓	✓	6.5	✓	✓	6.5	✓	✓	6.5	✓	✓	
DECK Drop back		7.5	✓	✓	7.5	✓	✓	7.5	✓	✓	7.5	✓	✓	7.5	✓	✓	
DECK length		11.5	✓	✓	12	✓	✓	12	✓	✓	12	✓	✓	12	✓	✓	
DECK		11.5	✓	✓	12	✓	✓	12	✓	✓	12	✓	✓	12	✓	✓	
DECK CURVE		11.5	✓	✓	12.5	✓	✓	12.5	✓	✓	12.5	✓	✓	12.5	✓	✓	
DECK sub length		1.5	✓	✓	1.5	✓	✓	1.5	✓	✓	1.5	✓	✓	1.5	✓	✓	
PLATEAU EXT.		16	✓	✓	17	✓	✓	17	✓	✓	17	✓	✓	17	✓	✓	
CORRECTION:																	
PREPARED BY			RQS MANAGER			SAMPLE MANAGER			PRODUCTION MANAGER			SR QA MANAGER					

### 3.2.4. Garments Quality Inspections Data Analysis

MOFO No. 2-07 Line X-07 QA DEPARTMENT

Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%	
Colour/Combo													
Inspector / Check Qty.	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	170	2.5%	
Defect Qty.	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	170	2.5%	
Defect Pcs. Repair Pcs.													
Defect Code & Size	S.W. - 39 S.W. - 61 S.W. - 20 S.W. - 57 S.W. - 60 S.W. - 66												
D.H.U.	18.7	18.5	2.0	2.5	16.5	18.5	18.5	18.5	18.5	18.5	185	2.5%	
Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%	
Inlines/ AQL Sign.													
Line Tech Sign.													
1st Highest	Defect Qty.			2nd Highest			Defect Qty.			3rd Highest			Defect Qty.

SW 01 Broken Stitch SW 11 Down Stitch SW 21 Hi-Low SW 31 Jam Stitch SW 41 Operation Mistake SW 51 Shading SW 61 Uneven Shape  
 SW 02 Bad Tension SW 12 Elastic Show/Reverse SW 22 Hole/Reject SW 32 Knot SW 42 Pulling SW 52 Slantily Attachment SW 62 Uneven Width  
 SW 03 Barlock Wron SW 13 Fabric Reverse SW 23 Hi-Ring SW 33 Loose Threat Inside Cup SW 43 Polity SW 53 Slub SW 63 Uneven Lab  
 SW 04 Crease Mark SW 14 Fiber Fill Broken SW 24 Incorrect SP/SPC SW 34 Label Reverse SW 44 Projection SW 54 Side Seam Curv'd SW 64 Uneven Seam Allowance  
 SW 05 Crooked Mark SW 15 Fabric Stretch Out SW 25 Incorrect Label SW 35 Layer Missing SW 45 Pair Mistake SW 55 Tension Loose/Tight SW 65 Up-Down  
 SW 06 Cup Busting Lc SW 16 Fabric Cut SW 26 Insecure Hook & Eye SW 36 Needle Hole/Needle Cyl SW 46 Print Missing SW 56 Twisted Binding SW 66 Uncut Thread  
 SW 07 Curling SW 17 Foreign Yarn SW 27 Incorrect Wire SW 37 Narrow Goods SW 47 Pleat SW 57 Twisted Shoulder SW 67 Wavy  
 SW 08 Croch Not Prc SW 18 Foreign Yarn SW 28 Incorrect Underwire SW 38 Over Stitching SW 48 Puckering SW 58 Threat Mistake SW 68 Wrinkle Binding  
 SW 09 Dirty Stain SW 19 Fabric Grain Line Wrong SW 29 Incorrect Measurement SW 39 Open Seam SW 49 Raveling SW 59 Uneven Stitch SW 69 Wire Play Loose/Tight  
 SW 10 Damage SW 20 Fold SW 30 Join Stitch SW 40 Oil Stain SW 50 Skip Stitch SW 60 Uneven Sharing SW 70 Wrong Trim

End Table QI Line QA/Auditor Line Technician Production Floor InCh. Officer QI Ass. Manager QA

### 3.2.5. Garments Quality Inspections Data Analysis

MOFO No. 2-10 Line X-10 QA DEPARTMENT

Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%	
Colour/Combo													
Inspector / Check Qty.	16.0	16.5	18.0	18.5	18.5	18.5	18.0	17.0	17.0	17.0	170	2.5%	
Defect Qty.	16.0	16.5	18.0	18.5	18.5	18.5	18.0	17.0	17.0	17.0	170	2.5%	
Defect Pcs. Repair Pcs.													
Defect Code & Size	S.W. - 01 S.W. - 11 S.W. - 39 S.W. - 49 S.W. - 59 S.W. - 66												
D.H.U.	17.2	17.0	18.5	18.5	18.5	18.5	18.5	18.5	18.5	18.5	185	2.5%	
Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%	
Inlines/ AQL Sign.													
Line Tech Sign.													
1st Highest	Defect Qty.			2nd Highest			Defect Qty.			3rd Highest			Defect Qty.

SW 01 Broken Stitch SW 11 Down Stitch SW 21 Hi-Low SW 31 Jam Stitch SW 41 Operation Mistake SW 51 Shading SW 61 Uneven Shape  
 SW 02 Bad Tension SW 12 Elastic Show/Reverse SW 22 Hole/Reject SW 32 Knot SW 42 Pulling SW 52 Slantily Attachment SW 62 Uneven Width  
 SW 03 Barlock Wron SW 13 Fabric Reverse SW 23 Hi-Ring SW 33 Loose Threat Inside Cup SW 43 Polity SW 53 Slub SW 63 Uneven Lab  
 SW 04 Crease Mark SW 14 Fiber Fill Broken SW 24 Incorrect SP/SPC SW 34 Label Reverse SW 44 Projection SW 54 Side Seam Curv'd SW 64 Uneven Seam Allowance  
 SW 05 Crooked Mark SW 15 Fabric Stretch Out SW 25 Incorrect Label SW 35 Layer Missing SW 45 Pair Mistake SW 55 Tension Loose/Tight SW 65 Up-Down  
 SW 06 Cup Busting Lc SW 16 Fabric Cut SW 26 Insecure Hook & Eye SW 36 Needle Hole/Needle Cyl SW 46 Print Missing SW 56 Twisted Binding SW 66 Uncut Thread  
 SW 07 Curling SW 17 Foreign Yarn SW 27 Incorrect Wire SW 37 Narrow Goods SW 47 Pleat SW 57 Twisted Shoulder SW 67 Wavy  
 SW 08 Croch Not Prc SW 18 Foreign Yarn SW 28 Incorrect Underwire SW 38 Over Stitching SW 48 Puckering SW 58 Threat Mistake SW 68 Wrinkle Binding  
 SW 09 Dirty Stain SW 19 Fabric Grain Line Wrong SW 29 Incorrect Measurement SW 39 Open Seam SW 49 Raveling SW 59 Uneven Stitch SW 69 Wire Play Loose/Tight  
 SW 10 Damage SW 20 Fold SW 30 Join Stitch SW 40 Oil Stain SW 50 Skip Stitch SW 60 Uneven Sharing SW 70 Wrong Trim

End Table QI Line QA/Auditor Line Technician Production Floor InCh. Officer QI Ass. Manager QA

### 3.2.6. Garments Quality Inspections Data Analysis

Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%
Colours/Combs												
Inspected / Check Qty.	150	150	200	100	200	200	200	200	200	200	1700	100%
Good Qty.	135	130	175	90	180	180	180	180	180	180	1500	88%
Spent / Dirty Qty.												
Oil Spent Qty.												
Reject Qty.	15	20	25	10	20	20	20	20	20	20	150	9%
Defect Pcs. Repair Pcs.												
Defect Code & size												
S 02 - 66	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
S 02 - 47	11	1111	1111	1111	11	1111	1111	1111	1111	1111	1111	1111
S 02 - 03	111	111	1111	1111	11	1111	1111	1111	1111	1111	1111	1111
S 02 - 09	111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
S 02 - 02	111	11	1111	11	1111	11	1111	1111	1111	1111	1111	1111
1st Highest	150	130	175	90	200	200	200	200	200	200	1700	100%
Defect Qty.	15	20	25	10	20	20	20	20	20	20	150	9%
2nd Highest	150	130	175	90	200	200	200	200	200	200	1700	100%
Defect Qty.	15	20	25	10	20	20	20	20	20	20	150	9%

SW 01) Broken Stitch	SW 11) Down Stitch	SW 21) Hi-Low	SW 31) Jam Stitch	SW 41) Operation Mistake	SW 51) Shading	SW 61) Uneven Shape
SW 02) Bad Tension	SW 12) Elastic Shown/Reverse	SW 22) Hole/Reject	SW 32) Knot	SW 42) Pulling	SW 52) Stainly Attachment	SW 62) Uneven Width
SW 03) Bartuck Wron	SW 13) Fabric Reverse	SW 23) Hi King	SW 33) Loose Throat Inside Cup	SW 43) Pointy	SW 53) Slub	SW 63) Uneven Lob
SW 04) Crease Mark	SW 14) Fiber Fill Broken	SW 24) Incorrect SPUSPC	SW 34) Label Reverse	SW 44) Projection	SW 54) Side Seam Curved	SW 64) Uneven Seam Allowance
SW 05) Crooked Mark	SW 15) Fabric Stretch Out	SW 25) Incorrect Label	SW 35) Layer Missing	SW 45) Pair Mistake	SW 55) Tension Loose/Tight	SW 65) Up-Down
SW 06) Cup Busting Lc	SW 16) Fabric Cut	SW 26) Insecure Hook & Eye	SW 36) Needle Hole/ Needle Cyl	SW 46) Print Missing	SW 56) Twisted Binding	SW 66) Uncut Thread
SW 07) Curling	SW 17) Foreign Yarn	SW 27) Incorrect Wire	SW 37) Narrow Goods	SW 47) Pleat	SW 57) Twisted Shoulder	SW 67) Wavy
SW 08) Crotch Not Prc	SW 18) Fabric Way Mistake	SW 28) Incorrect Underwire	SW 38) Over Stitching	SW 48) Puckering	SW 58) Threat Mistake	SW 68) Winkle Binding
SW 09) Dirty Stain	SW 19) Fabric Grain Line Wrong	SW 29) Incorrect Measurement	SW 39) Open Seam	SW 49) Rawedge	SW 59) Uneven Stitch	SW 69) Wire Play Loose/Tight
SW 10) Damage	SW 20) Fold	SW 30) Join Stitch	SW 40) Oil Stain	SW 50) Skip Stitch	SW 60) Uneven Sharing	SW 70) Wrong Trims

End Table QI      Line QA/Auditor      Line Technician      Production Floor Inch.      Officer QQ / Ass. Manager QI

### 3.2.7. Garments Quality Inspections Data Analysis

Hours	1st Hr.	2nd Hr.	3rd Hr.	4th Hr.	5th Hr.	6th Hr.	7th Hr.	8th Hr.	9th Hr.	10th Hr.	Total	%
Colours/Combs												
Inspected / Check Qty.	150	150	200	100	200	200	200	200	200	200	1700	100%
Good Qty.	135	130	175	90	180	180	180	180	180	180	1500	88%
Spent / Dirty Qty.												
Oil Spent Qty.												
Reject Qty.	15	20	25	10	20	20	20	20	20	20	150	9%
Defect Pcs. Repair Pcs.												
Defect Code & size												
S 02 - 66	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
S 02 - 47	11	1111	1111	1111	11	1111	1111	1111	1111	1111	1111	1111
S 02 - 03	111	111	1111	1111	11	1111	1111	1111	1111	1111	1111	1111
S 02 - 09	111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
S 02 - 02	111	11	1111	11	1111	11	1111	1111	1111	1111	1111	1111
1st Highest	150	130	175	90	200	200	200	200	200	200	1700	100%
Defect Qty.	15	20	25	10	20	20	20	20	20	20	150	9%
2nd Highest	150	130	175	90	200	200	200	200	200	200	1700	100%
Defect Qty.	15	20	25	10	20	20	20	20	20	20	150	9%

SW 01) Broken Stitch	SW 11) Down Stitch	SW 21) Hi-Low	SW 31) Jam Stitch	SW 41) Operation Mistake	SW 51) Shading	SW 61) Uneven Shape
SW 02) Bad Tension	SW 12) Elastic Shown/Reverse	SW 22) Hole/Reject	SW 32) Knot	SW 42) Pulling	SW 52) Stainly Attachment	SW 62) Uneven Width
SW 03) Bartuck Wron	SW 13) Fabric Reverse	SW 23) Hi King	SW 33) Loose Throat Inside Cup	SW 43) Pointy	SW 53) Slub	SW 63) Uneven Lob
SW 04) Crease Mark	SW 14) Fiber Fill Broken	SW 24) Incorrect SPUSPC	SW 34) Label Reverse	SW 44) Projection	SW 54) Side Seam Curved	SW 64) Uneven Seam Allowance
SW 05) Crooked Mark	SW 15) Fabric Stretch Out	SW 25) Incorrect Label	SW 35) Layer Missing	SW 45) Pair Mistake	SW 55) Tension Loose/Tight	SW 65) Up-Down
SW 06) Cup Busting Lc	SW 16) Fabric Cut	SW 26) Insecure Hook & Eye	SW 36) Needle Hole/ Needle Cyl	SW 46) Print Missing	SW 56) Twisted Binding	SW 66) Uncut Thread
SW 07) Curling	SW 17) Foreign Yarn	SW 27) Incorrect Wire	SW 37) Narrow Goods	SW 47) Pleat	SW 57) Twisted Shoulder	SW 67) Wavy
SW 08) Crotch Not Prc	SW 18) Fabric Way Mistake	SW 28) Incorrect Underwire	SW 38) Over Stitching	SW 48) Puckering	SW 58) Threat Mistake	SW 68) Winkle Binding
SW 09) Dirty Stain	SW 19) Fabric Grain Line Wrong	SW 29) Incorrect Measurement	SW 39) Open Seam	SW 49) Rawedge	SW 59) Uneven Stitch	SW 69) Wire Play Loose/Tight
SW 10) Damage	SW 20) Fold	SW 30) Join Stitch	SW 40) Oil Stain	SW 50) Skip Stitch	SW 60) Uneven Sharing	SW 70) Wrong Trims

End Table QI      Line QA/Auditor      Line Technician      Production Floor Inch.      Officer QQ / Ass. Manager QI



### 3.3 Summary Above Data Collection

Date	Buyer	Item	Pieces checked	broken stitch	missing stitch	Open Seam	Raw Edge	Dirty Spot	Hole	Oil Mark	High Stitch	Needle Cut	Uncut Thread	Placket	Pucker	Uneven Stitching	Total defect
01/05/2024	Celio	TShirt 100	100	1	0	0	0	0	0	0	1	1	1	0	0	1	5
02/05/2024	H & M	PoloShirt	120	3	0	1	0	0	1	5	0	0	0	0	0	0	10
03/05/2024	Riachuelo	Hoodie	90	0	3	0	0	0	1	0	1	0	0	0	0	0	5
04/05/2024	Mascot	TShirt 200	150	0	0	1	1	0	0	1	0	1	2	0	0	1	6
05/05/2024	Guess	Jack et	80	3	1	3	0	0	0	0	1	0	3	1	0	0	12
06/05/2024	U	Sho rts	110	0	2	1	0	2	1	0	1	0	0	2	0	1	10
07/05/2024	Nitex	TShirt	130	2	1	2	2	0	0	0	0	0	0	0	3	1	13
total			780	9	7	8	3	2	3	6	4	2	6	3	3	3	61
total defects %				14.75 %	11.47 %	13.11 %	4.91 %	3.27 %	4.91 %	9.84 %	6.56 %	3.27 %	9.84 %	4.91 %	4.91 %	4.91 %	100 %

## Data Summary

The image depicts a defect report for a garment manufacturing process, likely from a quality control department. It tracks defects across various items (T-shirts, polo shirts, hoodies, jackets, shorts) from different buyers over a period of time (January 5th to July 5th, 2024).

The defects are categorized into the following:

- Broken Stitch 14.75 %
- Open Seam 13.1%
- Missing Stitch 11.47%
- Oil Mark 9.84%
- Uncut Thread 9.84 %
- High Needle Stitch 6.56 %
- Raw Edge 4.91%
- Hole 4.91%
- Pucker 4.91%
- Uneven Stitching 4.91%
- Pleat 4.91%
- Dirty Spot 3.27%
- Needle cut 3.27%

For each item and date, the report shows the total number of pieces inspected, the number of defects found for each category, and the overall defect percentage.

## Data Analysis

### Overall Defect Rate

The overall defect rate appears to be relatively high, with most items exceeding 20% defect rate. This suggests potential issues in the manufacturing process that need to be addressed.

#### Most Common Defects

The most common defects seem to be:

- Missing Stitch 11.47 %
- Open Seam 13.10 %
- Broken stitch 14.75%

These defects consistently appear across different items and dates, indicating a systemic issue in the production process. Buyer-wise Performance

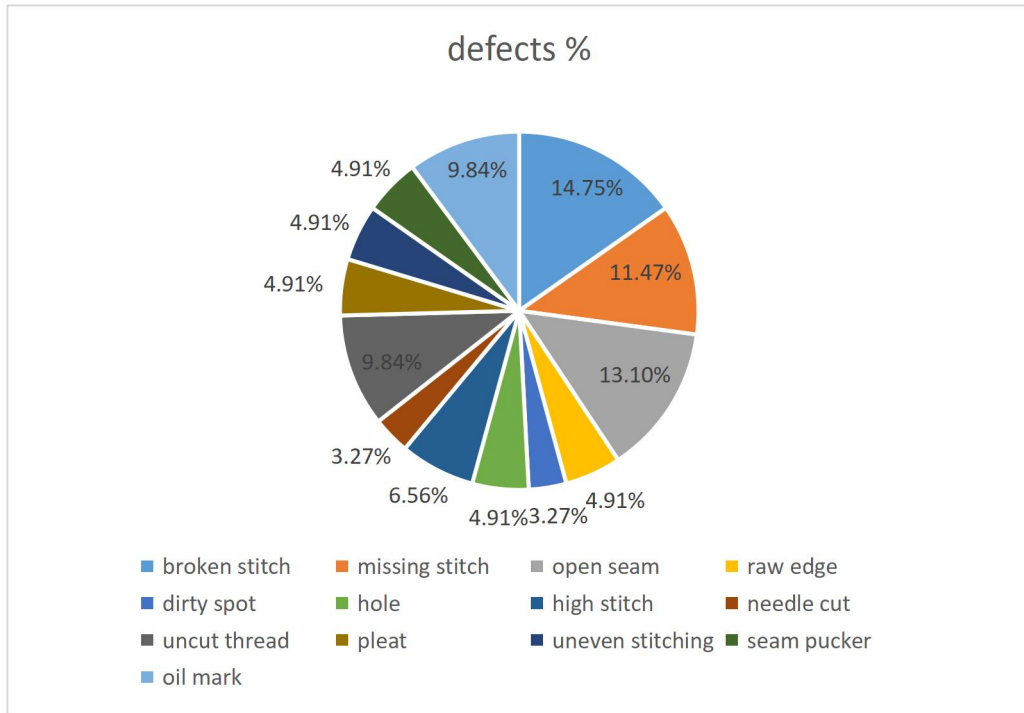
- Celio: Had the defect rate (5 ) on January 5th, likely due to a specific batch or production issue.
- H & M: Maintained a relatively consistent defect around (10)
- Riachuelo: Had a higher defects (5) on March 5th.
- Mascot: Had a lower defects (6) on April 5th.
- Guess: Had a very high defects (12) on May 5th.
- U: Had a moderate defects (10) on June 5th.
- Nitex: Had a consistent defect around (13) on July 5th. Item-wise Performance
- T-Shirts: Had the highest number of defects across different dates and buyers, indicating a potential issue in the T-shirt manufacturing process.
- Polo Shirts: Had a moderate number of defects.
- Hoodies: Had a moderate number of defects.
- Jackets: Had a high defect rate on May 5th.
- Shorts: Had a moderate number of defects.

**CHAPTER – IV**  
**RESULT & DICUSSION**

#### **4.1: Intensity wise Defects (%):**

- Broken Stitch 14.75 %
- Open Seam 13.1%
- Missing Stitch 11.47%
- Oil Mark 9.84%
- Uncut Thread 9.84 %
- High Needle Stitch 6.56 %
- Raw Edge 4.91%
- Hole 4.91%
- Pucker 4.91%
- Uneven Stitching 4.91%
- Pleat 4.91%
- Dirty Spot 3.27%
- Needle cut 3.27%

## 4.2. Data Analysis of Quality Control & Inspection



Here is the pie chart representing the **defects percentage by defects type**. This visualization highlights the defect count for each defects, with "Missing stitch" having the highest total defects (3.43%) and "Open seam" (3.43%) and "placket" having the lowest (0%).

### 4.3 Major defects and their causes and remedies:

#### **Broken Stitch (14.75%):**

A broken stitch is a sewing fault that shows as an interrupted or incomplete line of stitches when the thread continuity in a stitched seam or pattern is broken



Fig 4.1 :Broken Stitch

#### **Causes of Broken Stitch**

##### **1. Incorrect Needle Size or Type**

- **Needle too large or small:** Using a needle that doesn't match the fabric can cause stitches to break. A large needle on delicate fabrics can put excessive strain on the thread, while a small needle on thicker fabrics may lead to skipped or broken stitches.
- **Damaged needles:** Bent, dull, or improperly installed needles can also cause problems with stitching.

##### **2. Tension Problems**

- **Too tight or too loose:** If the tension is incorrectly set on the machine, stitches may be weak. Tight upper thread can lead to it snapping, while loose lower thread can cause stitches to unravel.
- **Inconsistent tension:** Changes in tension while sewing can result in uneven stitches and cause the thread to break.

### 3. Wrong Thread Choice

- **Incompatible thread:** Using the wrong type of thread for the fabric or stitch can result in broken stitches. For example, cotton thread on stretch fabrics like knits can snap, while heavier threads may break on delicate fabrics.
- **Old or brittle thread:** Thread that has been stored for a long time or exposed to light and heat can weaken, making it more prone to breaking.

### 4. Improper Machine Settings

- **Incorrect stitch type or length:** Some stitches, like decorative or stretch stitches, require specific machine settings. If the wrong settings are used for the fabric, the thread can break.
- **Misadjusted machine tension:** Over time, the machine's internal tension may need adjustment, as it can shift or wear out, leading to irregular stitches.

## Remedies of Broken Stitch

Here is the paraphrased version:

### 1. Maintain Your Sewing Machine

- **Regularly clean and oil:** Accumulation of dust, lint, and fabric scraps can impact the machine's performance. Clean the machine, especially around the needle and bobbin areas, and lubricate it according to the manufacturer's recommendations.

- **Check for worn or damaged parts:** Regularly inspect for any worn-out components, such as the bobbin case or feed dogs, and replace them if needed.

## 2. Sew at a Controlled Speed

- **Avoid excessive speed:** Sewing too quickly can put unnecessary stress on the needle and thread, leading to breakage. Slow down for more controlled and precise stitching.

## 3. Handle Fabric with Care

- **Do not pull or stretch the fabric:** Let the fabric feed naturally through the machine. Pulling or stretching it can affect the tension and cause stitches to break.
- **Use stabilizers for stretchy fabrics:** When working with stretchy materials like knits, use a stabilizer to support the fabric and reduce the chance of broken stitches.

### **Open Seam(13.10%):**

An open seam is one where the seam allowance , the piece of fabric between the edge of the material and the stitches are visible.



Fig 4.2 : Open seam

## Causes of Open Seam

### 1. Wrong Stitching

- **Inappropriate stitch type:** Choosing the wrong stitch for the fabric can lead to an open seam. For example, a straight stitch on stretchy fabrics may cause the seam to open as the fabric stretches.
- **Inaccurate stitch length:** If the stitch length is too long, the seam may not be strong enough to hold the fabric, resulting in it opening.

### 2. Incorrect Tension Settings

- **Excessively tight tension:** When the upper thread tension is too high, it can pull the fabric too tightly, causing the seam to break open.
- **Excessively loose tension:** If the tension is too loose, the seam may not be securely fastened, leading to an open seam.

### 3. Improper Fabric Handling

- **Uneven feeding of fabric:** If the fabric isn't fed through the sewing machine evenly, the seam could become uneven and prone to opening. This can occur when the fabric is pulled or pushed while sewing.
- **Misaligned fabric edges:** If the fabric edges aren't aligned properly before stitching, gaps may appear in the seam, eventually causing it to open.

## Remedies of Open Seam

Here's the paraphrased version:

### 1. Examine Needle and Thread

- **Use the correct needle:** Ensure you're using the appropriate needle size and type for the fabric to avoid weak or uneven stitches.
- **Select the right thread:** Choose a thread that is suitable for the fabric. Thicker threads are best for heavy materials, while finer threads work better with delicate fabrics.

## 2. Reinforce the Seam

- **Double stitch:** To strengthen a weak seam, sew over it again or use a backstitch to make it more secure.
- **Apply seam tape or fabric glue:** For additional support, you can use seam tape or fabric glue to temporarily hold the seam in place before stitching.

## 3. Finish the Raw Edges

- **Overlock or zigzag the edges:** To prevent fraying and keep the seam from opening, finish the edges of the fabric with an overlock or zigzag stitch.
- **Use bias tape:** Adding bias tape along the seam edges can provide extra reinforcement and help prevent the seam from opening.

### 4.5. Missing Stitch(11.47%):

It is formed when the needle holds the old loop and does not receive new yarn. It connects two loops of the same course that are not in adjacent wales.

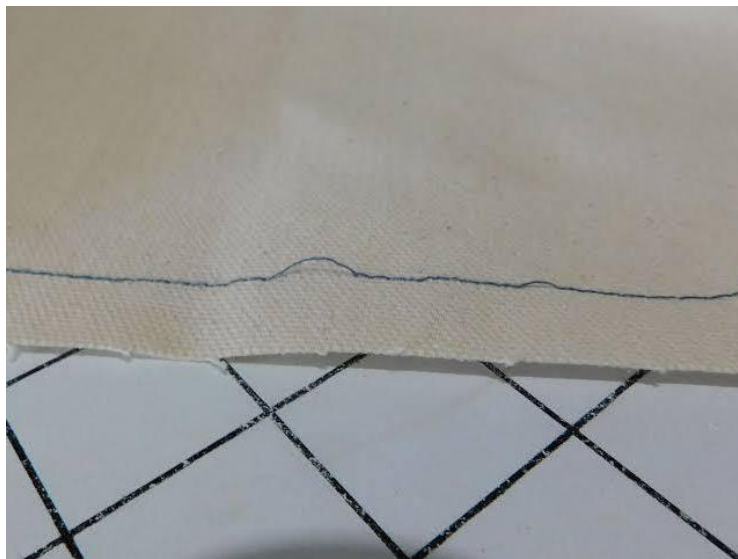


Fig 4.3 : Missing stich

## Causes of Missing Stitch

### 1. Clogged or Inadequately Maintained Sewing Machine

- **Accumulation of lint or debris:** Dust, lint, and fabric remnants around the needle, bobbin area, or feed dogs can block the sewing process, causing missed stitches.
- **Worn or malfunctioning components:** Over time, parts like the feed dogs or needle plate may degrade or become misaligned, leading to uneven stitches or skipped stitches.

### 2. Irregular Fabric Feeding

- **Uneven fabric movement:** If the fabric doesn't feed evenly through the machine, missed stitches may occur. Pulling or pushing the fabric during sewing can disrupt the machine's stitching ability.
- **Issues with fabric thickness:** Fabric that's too thick or too thin for the machine settings or needle can cause improper feeding, leading to skipped stitches.

### 3. Incorrect Machine Configurations

- **Improper stitch settings:** Using an incorrect stitch type or length can result in missing stitches. Some stitches require specific settings, and incorrect configurations can prevent proper stitching.
- **Wrong presser foot:** Using the wrong presser foot for the type of fabric or stitch can cause stitches to be skipped.

## . Remedies of Missing Stitch

### 1. Keep Sewing Machine Clean

- **Regularly clean the machine:** Dust, lint, and fabric remnants can interfere with the needle and bobbin movement, leading to missed stitches. Clean the machine often, particularly around the needle, bobbin, and feed dogs.
- **Lubricate the machine:** Follow the manufacturer's recommendations for lubrication to keep the machine's moving parts operating smoothly and avoid skipped stitches.

### 2. Ensure Proper Fabric Handling

- **Feed fabric evenly:** Make sure the fabric flows evenly through the machine without being pulled or pushed. Uneven feeding can result in missed stitches.
- **Adjust fabric thickness:** If the fabric is too thick or too thin for the needle and machine settings, either adjust the settings or change the needle to suit the fabric. Using an incompatible fabric thickness can prevent proper stitching.

### 3. Set the Correct Stitch Settings

- **Choose the right stitch type and length:** Ensure that the stitch type and length are appropriate for the fabric and project. Certain stitches need specific settings, and using incorrect settings can cause skipped stitches.
- **Use the proper presser foot:** Make sure you are using the correct presser foot for the fabric and stitch type to avoid missed stitches.

# **CHAPTER – V**

## **CONCLUSION**

This research delved into the critical role of quality control in garment sewing inspection. It aimed to identify current practices, evaluate their effectiveness, pinpoint root causes of defects, and propose improvements for a more robust quality control system.

This thesis explored various quality control approaches and methods for garment sewing inspection, aiming to enhance both production and product quality within the apparel manufacturing industry. Through the assessment of different inspection systems, quality measures, and industry standards, it became evident that a comprehensive and organized quality control strategy can effectively reduce defects and improve product consistency.

The results emphasized the significance of integrating automated inspection technologies with traditional manual methods to achieve the most effective results. Furthermore, the research highlighted the importance of having well-trained staff, standardized procedures, and strong communication across departments to ensure consistent adherence to quality standards during production.

In conclusion, establishing a robust quality control system for garment sewing inspection is crucial for maintaining a competitive advantage, reducing production costs, and ensuring customer satisfaction. As the garment industry evolves, incorporating advanced inspection techniques—such as real-time monitoring and machine learning-based defect detection—will play a key role in further refining quality control practices. Future research could focus on optimizing these technologies and exploring their adaptability across various production environments to drive continuous improvements in garment manufacturing quality.

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**The paper explores the future of garment quality control, focusing on the integration of smart technologies and data analytics.**