International Labour Organization

Inspecting garments

Finishing operations

Factory Improvement Toolset

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Factory Improvement Toolset

The Factory Improvement Toolset (FIT) is an innovative self-facilitated, activity-based learning approach designed by the International Labour Organization (ILO) to create more decent and sustainable employment. FIT supports manufacturers in global supply chains to improve productivity, competitiveness and working conditions by upgrading production systems and factory practices.

FIT has been developed to be a sustainable, time- and cost-efficient option for supporting factories to enhance productivity through improved business practices and working conditions. FIT focuses on areas of production improvement and actions to be taken specific to each participating factory. It can be utilized as stand-alone learning tools or to complement other training programmes.

With each module lasting no more than 2.5 hours, FIT enables factories to train personnel, whilst minimizing interference with production realities. The easy-to-use methodology makes it possible to rapidly scale the implementation to reach a large cohort of trainees across multiple production facilities.

Working in small groups, participants review real-life situations and engage in discussions to determine improvements to be made in factory without an external trainer or specialist. This self-facilitated, activity-based and highly participatory learning approach positions participants as both student and teacher and makes the toolset self-tailored to the needs and interests of each group.

About this module

This FIT module on Inspecting garments is a training for garment manufacturers to improve finishing operations. Participants will work on detecting, recording and reducing defects. This module takes about 2 hours to complete.

Upon completion of the training, participants should have:

- Learnt how to detect and categorize defects and how to carry out initial and final inspections.
- Learnt how to record inspection results daily and precisely.
- Discussed how to reduce defects during finishing to improve garment quality.

The **Factory Improvement Toolset** of the **International Labour Organization (ILO)** are developed and provided by the ILO's **Enterprises Department**.

Authors: Alix Machiels, Sara Andersson, Charles Bodwell, Jayantha R. de Silva.

Guidelines for successfully using the training tool

Read out-loud

The FIT tool is designed for participants to take turns reading the instructions in the modules out loud to the group. At least one member of the group should be selected in the beginning of the session to take this responsibility.

Work as a group

Always work in groups of 5-7 during a FIT session. The programme will not be successful if participants work independently or do not collaborate with each other.

Be active

Encourage everyone in the group to actively contribute to the discussion. Ensure that no group member dominates the discussion or does not participate at all.

Monitor the time

Select one member of the group to monitor the time for each activity and remind the group when it is time to move to the next exercise.

Complete the action plan

Complete the action plan at the end of the session. This will help ensure that FIT results in improvements in the factory. Review the plan a while after the session to make sure that actions in the plan has been completed accordingly.

Icons

A set of icons is used throughout the modules to provide easy to recognize reference points for different tasks within each session and activity.

Read out loud

One member of the group should read out loud to the rest of group.

Knowledge link

Knowledge and skills are linked to other FIT learning resources and support.

Time allotted

Indicates how much time each sessions and activity should take.

Supplies needed

Indicates that supplies may be necessary to complete the session.

Begin step-by-step instructions

Indicates that the step-by-step instructions for an activity are beginning.

Think about it

Indicates additional information for the participants to think about.

Measuring your performance

Measuring operational efficiency is a key aspect of running a productive factory. The box(es) below guides you in understanding which measurement indicator(s) can be used to measure and evaluate the performance of your factory in relation to the topics covered in the FIT finishing operations series.

Indicator 1	**Defect per hundred units - DHU (%)**
Definition	The amount of defects found in average per 100 inspected pieces or garments. The lower the DHU, the higher the quality in your factory. It can be calculated separately for each line, or for all lines together.
Purpose	To understand quality in your finishing room, set a quality improvement target, and begin to identify ways to reduce defects and improve garment quality.
Calculation	(total # defects found / total # of pieces or garments inspected) x 100% Notes: • It is better to calculate this separately for in-line and end-line inspections. • If only the end-line calculation is taken but in-line inspection is also recorded, add defects found in in-line and end-line, however, do not add up garments inspected at in-line (only take the end-line count).
Frequency	Calculate daily (for each line or all lines), then calculate a monthly average.
Responsible	Finishing room manager / Line supervisor / Quality checker

Indicator 2	**Shipment audit passing rate (%)**
Definition	The proportion (percentage) of shipment audits (or buyers' audit) that your factory passed on the first trial (the first time the audit was conducted).
Purpose	To understand the quality of your production operations, set a quality improvement target, and begin to identify ways to improve garment quality in the factory.
Calculation	(# of shipment audit passed the xth time / total # of shipment audits) x 100% Note: # of shipment audits passed = # of shipment audits passed on the first trial (the first time the audit is conducted) Similarly, the factory must also calculate the shipment audits passed 2nd time and so on ….
Frequency	Calculate monthly.
Responsible	Finishing room manager / Shipping clerk

Session 1

Business case study

Goals

Preparing you for the type of discussions you will have with other group members throughout the learning module and understanding the benefits of being exposed to different perspectives.

Understanding better why having good inspection practices is important in the factory.

Session 1

Overview

One member should read the full session out loud to the rest of group

15 minutes

Learning manual, pens, markers and poster paper

A business case study presents a real-life situation for learners to reflect on and discuss with other group members. By discussing the case, students learn from others' ideas and perspectives, and develop an understanding of the topic at hand within the workplace.

One group member reads the case study out loud

The whole group discusses the case study

Everyone develops a deeper understanding of the topic

Activities

Activity

1

15 minutes

Case study review and respond

The case study below presents a situation that could happen in real life.

Instructions:

1) As a group, listen to one member read the case study below while following along in your learning module.

Rani is a new finishing manager at the HS denim factory. She oversees all finishing operations. In the finishing room, there is only two inspection tables, to inspect garments after pressing. Checkers only have time to inspect about 20% of garments to detect washing, pressing and other defects. As a result, many shipments get rejected by buyers because too many defects are found. This wastes time, money and materials, and buyers are unhappy. Checkers do not record how many and what types of defects they come across, so Rani cannot evaluate overall quality.

To solve these problems, Rani sets up a team of checkers, and a new inspection checkpoint right after washing, so washing defects can be detected earlier. Checkers now inspect 100% of clothes, and record defect type, amount and rate. They work with supervisors to identify the cause and prevent defects. Daily inspection reports are drafted for Rani to track quality improvements. Results are displayed in the finishing section.

Thanks to these changes, Rani and the supervisors can evaluate quality, and make necessary changes to avoid defects. The defect rate goes down and quality improves over time. Shipments are now rarely rejected, and buyers are satisfied with the quality.

2) Together, discuss Rani's situation by answering the three questions in table 1 on the next page.

Table 1. Questions about Rani's situation
1. What problems has Rani identified? What impact do these problems have on the factory and its workers?
2. What does Rani do or change in order to solve these problems?
3. What are the results of Rani's solutions for the factory and its workers?

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Session 2

Learning about the topic

Goals

Discussing and understanding inspection in its importance in the finishing room.

Understanding common defects and discussing good practices for carrying out inspections.

Learning how to record inspection results and draft daily inspection reports.

Discussing how to improve garment quality by systematically working towards reducing defects.

Session 2

Overview

One member should read the full session out loud to the rest of group

90 minutes

Learning manual, pens, and markers

This training module helps you improve your finishing operations by focusing on final checking. Inspecting garments along the finishing process is very important to maintain quality and keep buyers happy. It also helps you save costs and avoid waste by detecting defects before garments are packed and shipped. Reducing defects also improves productivity and overall quality. Throughout this module, you will work on the three steps below.

Inspecting garments

Recording results

Reducing defects

First, you will discuss inspection processes in your finishing section. Then, you will learn more about the types of defects to look out for, how to carry out inspections, and how to record the results of initial and final inspections. Finally, you will discuss ways to reduce defects and improve quality in your factory.

Activities

Activity
2a

20 minutes

Checking garments

Checking garments in the finishing section is a very important part of the finishing process. It should be done by checkers, who coordinate with the finishing and quality managers. In this activity, you will discuss inspection processes and their importance.

Instructions:

1) Together, look at the description of four finishing inspections in table 2, then match each with its name by writing down the corresponding number on the right. Solutions are at the bottom of the page.

2) Together, discuss:

- Which of these inspections do you carry out in your factory?
- What percentage do you inspect? Who is responsible?

3) Together, look at the chart and the different steps of inspection in table 3. Then, put the steps in the correct order by matching them with a number on the chart. Solutions are at the bottom of the page.

4) Together, discuss the two questions in table 4.

Table 2. Checking garments in the finishing room

1. Initial checking; 2. Needle detection; 3. Final checking; 4. Presentation checking.

Description	#
Checkers inspect 100% of garments on inspection tables (wash garments only). Results are recorded.	
Checkers inspect 100% of pressed garments on inspection tables. Results are recorded. Defective garments are sent to the appropriate operator for re-work.	
Using a metal detector, 100% of packed (poly bags) garments are checked for needle (parts). This is often a mandatory operation to guarantee safety.	
Checkers inspect a percentage of packed garments to make sure folding, bags and tags are as specified and in good condition.	

Solutions: 1, 3, 2, 4.

This module focuses on initial and final checking. To learn more about presentation checking, ask for the “Packing garments” module.

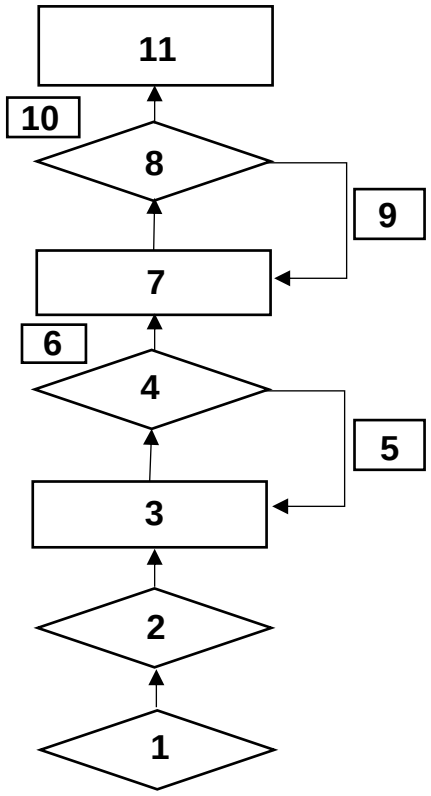
Table 3. The inspection process		
Chart	**Steps of inspection**	**#**
	Initial checking (after wash)	1
	Defects found (2)	
	No defects found (2)	
	No defects found (1)	
	Stain removal, finishing, pressing	
	Final checking	
	Presentation checking	
	Folding, tagging, packing	
	Defects found (1)	
	Cartoning, warehousing and dispatch	
	Needle detection	

Table 4. Importance of inspection
1. How can good garment inspection in the finishing section help you **reduce costs**?
2. How can good garment inspection help you increase **productivity and quality** in the finishing section?

Solutions: 1, 9, 10, 6, 3, 4, 8, 7, 5, 11, 2.

Activity

2b

20 minutes

Identifying defects

Checkers **inspect** garments and techniques (how operators perform operations) for defects or lack of conformity to specifications. In this activity, you will discuss common defects and good practices.

Instructions:

1) Finishing checkers should primarily check for 3 types of defects: washing, pressing, other. Together, look at the list of defects in table 5, then write their number in the corresponding column(s).

2) Together, discuss:

- Which of these defects are the most common in your finishing section? Circle them in the table.
- Which type of defect is the most common in your factory?

3) Together, read the list of good practices in table 6. Put a ✓ in the column on the right if you apply it in your factory, then discuss: What can you do to improve your checking practices?

Table 5. Common defects in finishing

Washing defects	Pressing defects	Other defects
16	8	26

List of common defects

1. Burn or scorch marks
2. Shine marks
3. Press marks
4. Watermarks
5. Products moist after pressing
6. Twisted or distorted garment
7. Seams not aligned
8. Uneven creases
9. Colour bleeding
10. Melting of the fabric
11. Excessive shrinking of the fabric
12. Decolorized patch
13. Incorrect measurements
14. Yellowing of fabric or seams
15. Broken, unravelling, skipped stitches
16. Corrosion of fabric or seams
17. Abrasion marks or holes
18. Misaligned stripes or seams
19. Rough or waxy hand feel (not soft)
20. Open, crooked, puckered seams
21. Wrong or misaligned label
22. Wrong stitches per inch
23. Untrimmed threads
24. Raw edges instead of hems
25. Missing trims, buttons, button holes
26. Incorrect trims
27. Needle damage
28. Incorrect or mismatched fabric shade

Table 6. Carrying out inspections	
Good practices	✓
1. Inspection should be carried out on 100% of garments by reference to approved measurement specifications, line samples and trim cards.	
2. Checkers identify defects and place a small sticker on the garment where a defect is found. This can help with stain removal as well.	
3. Defective garments are given to the relevant supervisor with an orange tag on them, to be handed to the relevant department for re-work.	
4. Rejected garments (cannot be re-worked) are handed to the relevant supervisor with a red tag on them. Causes are investigated.	
5. The Quality department keeps track of re-cuts and informs Merchandising and Production if the quantity rejected goes beyond extra cut (2-3%).	
6. Checkers identify the causes behind every defect found, and record defects, their amount and causes with the garment tag #.	
7. When the cause of the defect is found, action should be taken by the relevant manager as soon as possible to avoid additional defects.	
8. To save time, the quality department should have drafted an inspection checklist for the style that checkers can use.	
9. Checkers record defects in a form. The washing / pressing supervisor should consult the form several times a day to evaluate overall quality.	
10. Based on the form, supervisors should identify and work with (re-train) operators / operations with the highest defect frequency.	
11. Based on the form, checkers also draft a daily inspection report, recording defect rate, type, frequency, cause, and re-works.	
12. Inspection reports are given to the finishing manager at the end of the day or early the next day.	

If in-line finishing is used in your factory, final inspection is carried out directly in the lines (after in-line and end-line sewing inspections). To learn more, ask for the “Finishing garments” module.

Activity

2c

30 minutes

Recording results

Record-keeping is important to identify problems and improve quality in your finishing section. Checkers should carefully record inspection results, and line supervisors should consult them often. In this activity, you will learn how to record final inspection results.

Instructions:

1) Together, discuss: Do you record inspection results in your factory? If so, how (using what type of document)?

2) Have a participant read aloud the scenario in table 7 while looking at the inspection record, and make sure everyone understands how it was filled in. Then, discuss: Would you use this form in your factory? Why or why not?

3) Together, answer the five practice questions in table 8. Solutions are at the bottom of the page.

The quality team should come up with a **checklist** of potential defects for each style, which checkers can use during the inspection. This helps them save time and ensures a thorough and standardized inspection.

Table 7. Inspection report

Scenario: Today, checker Khem performs a final inspection for finishing line 5. When she finds a defect, she adds a bar (/) in the right line (critical operation / defect type) and column (hour). At the end of the day, she calculates the total for each operation and defect type, the total amount of defects, defective garments and rejected garments, and the percentage of defective garments. Then, she hands the report to the line supervisor.

Inspection report

Date: 6 March	**Style #**: 67956	**Line**: 5	**L. supervisor**: Nat
Inspection: ☐ In-line ☐ End-of-line ☑ Final			**Checker**: Khem

PART 1: OPERATIONS

#	Critical operations	Hour								Total	%
		8-9	9-10	10-11	11-12	1-2	2-3	3-4	4-5		
1	Collar join									0	0
2	Shoulder join			//		/		//		5	12.5
3	Sleeve hem		/					/		2	5
4	Wash 1, bleach	//	/	//	/	/			//	10	25
5	Wash 2, detergent	/								1	2.5
6	Drying						/		/	2	5
7	Thread trimming		/	//	/	/				5	12.5
8	Button attach	//								2	5
9	Stain removal	/				/			/	3	7.5
10	Pressing						///	/	𝍸 /	10	25
	Total	6	3	6	2	5	4	4	10	**40**	**100**

PART 2: SUMMARY

#	Defects	Hour								Total	%
		8-9	9-10	10-11	11-12	1-2	2-3	3-4	4-5		
A	Fabric twist	/	/	/						3	7.5
B	Burn mark		/	/			//		//	6	15
C	Shine mark						/	/	𝍸 /	8	20
D	Press mark					//				2	5
E	Watermark							/		1	2.5
F	Moisture	///								3	7.5
G	Stains		/	///	//	/		/		8	20
H	Stain / dirt mark									0	0
I	Uneven crease			/						1	2.5
J	Colour bleed	/				/	/			3	7.5
K	Shrinkage	/							//	3	7.5
L	Button placement									0	0
M	Damaged buttons					/		/		2	5
	Total	6	3	6	2	5	4	4	10	**40**	**100**

Total checked	400	**Total defective garments**	35	**% defective**	
Total defects	40	**Total rejected garments**	1	**DHU %**	

To track and evaluate quality, it is important to calculate daily:

1. The proportion (percentage) of defective garments.

(# of defective garments / # of checked garments) x 100

2. The amount of defects per hundred garments checked (DHU).

(# of defects / # of checked garments) x 100

Table 8. Practice questions
1. When (at which hour) were the most defects made? What could be the reason?
2. Which defect(s) was/were the most common today? What could be the reason(s)?
3. Which critical operation(s) produced the most defects today? What could be the reason(s)?
4. If Khem checked a total of 400 garments today, what is the percentage of defective garments today? Is it high or low? *See formula above.*
5. If Khem checked a total of 400 garments today, what is the amount of defects per hundred units (DHU)? *See formula above.*

Similar forms can be developed and used for initial inspection and presentation checking simply by changing defect codes.

Solutions: 1. 4~5; 2. Shine marks, stains; 3. Wash 1, pressing; 4. (35/400) x 100 = 8.75%; 5. (40/400) x 100 = 10%

Activity

2d

20 minutes

Reducing defects

Inspecting garments helps you correct defects. It should also help you continuously improve quality by **reducing defects**. In this activity, you will discuss how to correct and prevent defects.

Instructions:

1) Together, look at the inspection report in table 7, then brainstorm: How could this report be used to track, evaluate and improve garment quality? Write down ideas and steps in table 9.

2) There are two main causes for defects: machine and method. Have a participant read aloud the explanations in table 10, then, for each cause, discuss: What do / could you do to prevent them? Write down your ideas in the space provided.

3) Together, look at the list of steps in table 11 for addressing method defects, and put them in the correct order by writing a number from 1 to 11 in the right column. Solutions are at the bottom of the page.

Table 9. Improving quality

How can inspection reports be used to track, evaluate and improve garment quality?

Based on inspection reports, finishing managers should systematically identify the operations that cause the most defects, analyze the problems, and solve them together with workers and supervisors.

Table 10. Causes of defects

Machine (Objects)	Method (People)
There is an issue with the machine or equipment used during the process. These issues should be identified and handled by **mechanics or specialists**! Examples: • Sewing needle too large • Wrong wash chemical • Malfunctioning iron 	The worker is performing the operation in an incorrect way. These issues should be identified and handled by **supervisors and workers**! Examples: • Iron heat is too high • Washing machine loaded too heavily • Inaccurate sewing 
How to prevent?	
Example: Checking machines or equipment daily for malfunctions.	Example: Briefing workers properly on washing guidelines.

Some defects are caused by material quality (for example, thread breaks), or other operations such as storing, spreading and cutting. When those defects are identified, the quality manager should coordinate with the other departments to avoid them in the future.

Table 11. Addressing method defects	
Steps	**#**
The checker contacts the relevant supervisor (washing, pressing, line supervisor…?) to identify the cause of the defect.	1
Come back a little later to check that the batch has been inspected and defective garments have been repaired or signalled.	
Show the workers the correct method (how to perform the work correctly) to avoid this defect.	
Explain the defect to the workers, and make sure that they understand why it is defective.	
The checker reviews the inspection record form to see whether this is an isolated or recurring quality issue – and tells the supervisor if it is a recurring issue.	
The supervisor takes the defective garment to the relevant worker(s) as soon as possible.	
Ask the operator to show and explain to you why the garment is defective by comparing it with a defect-free garment.	
Find out why the defect was made or why it was not detected (e.g. fatigue).	
Ask the operator to explain how they performed their work. If applicable, ask them to perform the operation in front of you and observe.	
Ask the workers to inspect their current batch for similar defects, and repair immediately if defects are found. Motivate and encourage them.	
If applicable, ask the workers to practice. Observe, and make sure the correct method is used.	

Defective garments should be sent for **re-work** (repair) whenever possible rather than kept aside and can amount to a short shipment. This avoids waste and saves costs, but it also takes time. So, the priority should be to prevent defects.

Solutions: 1, 11, 8, 4, 2, 3, 5, 7, 6, 10, 9.

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ELIE
TAHARI
*JACKET (LINE)

Session 3

Action items

Goals

Summarizing and revising the new knowledge gained.

Identifying concrete applications of the new knowledge that benefit your factory.

Session 3

Overview

One member should read the full session out loud to the rest of group

20 minutes

Learning manual, pens, and markers

Throughout this module, you gained new knowledge on how to detect defects in the finishing section, then record the results of your inspection and use them to improve quality.

Inspecting garments

Recording results

Reducing defects

In this session, you will think of ways to apply your new knowledge to improve garment checking in your factory by reviewing best practices and drafting your own action plan.

Activities

Activity

3a

5 minutes

Best practices checklist

In this activity, you will review best practices for inspecting garments as a next step for evaluating your own and implementing improvements.

Instructions:

1) Together, look at the list of best practices in table 12, and put a ✓ in the column on the right if you use these practices in your factory.

Table 12. Inspecting garments

Best practices	✓
1. Initial and final inspections are carried out by checkers in the finishing section – or in each line if the in-line finishing system is used.	
2. Defects are identified and recorded for all inspections, and defective percentage (DHU) calculated daily based on inspection reports.	
3. Supervisors work together with checkers to identify defects, their causes, and how to reduce and solve them to improve quality.	
4. Defective parts or garments are sent back to the relevant unit for re-work whenever possible.	
5. Supervisors train operators to correct and prevent defects if method defects are identified, or coordinate with mechanics (machine defects).	
6. Overall quality is tracked using inspection reports.	

Activity

3b

15 minutes

Your action plan

In this activity, you will think of ways to apply your new knowledge to improve garment inspection in your factory by drafting your own action plan.

Instructions:

1) Together, fill in the action plan (table 13) on the next page. Identify a key problem that you want to solve and write down the solutions you identified while working on this module.

Table 13. Inspecting garments – Action Plan

Problem identified				
Solutions identified	**Action(s) to be taken**	**Person responsible**	**By when?**	**How will improvements be measured?**

Inspecting garments

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FIT is being piloted in Asia under the regional Decent Work in the Garment Sector Supply Chains in Asia project funded by the Government of Sweden.

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