Slitter Area

Participant Guide

Line 4

Module 1

TABLE OF CONTENTS

PARTICIPANT GUIDE INTRODUCTION

Participant guides will lead you through the training process broken up by days**.** In each, you will find outlines for the training courses you will take that day as well as activities and tasks you must complete. These guides will consist of a combination of**:**

eLearning modules

Engaging videos,

Instructor-led courses,

Hands-on classes and activities,

Document Application,

(E.g., job aids, work instructions, etc.)

and other **activities** to help you learn on the job. **To signify your completion** of each section to the best of your abilities, check the box at the end and then have your training coordinator initial when applicable. **Completion of all materials is required**.

MODULE 1 OBJECTIVES

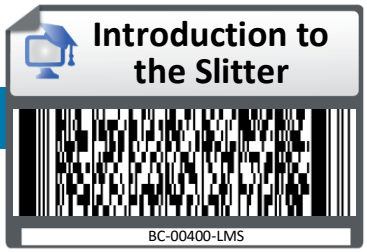
After you complete Module 1's activities, you will be able to:

- Identify the machines, systems, and parts that make up the slitter and [removed]
- Interpret work orders
- Properly tape, label, and measure a doff before it goes to packaging
- Place cores onto the core cutter and resume operation of the [removed]
- Identify various quality defects

☐ SLITTER AND PACKAGING AREA OPERATIONS INTRODUCTION

[removed] produces non-woven fabric based on the needs and specifications of our customers. All material begins its life at the mainline, where polymers are melted and worked into a sheet of nonwoven fabric called the "**web**". This **web** is then wound into large parent rolls and sent to the **slitter area**.

In the **Knife Group Area,** the **web** is cut (or slit) and then continues to be wound into individual **slit rolls**. The slit rolls are then taped, labeled, and sent to packaging. Your participant guides will provide you with the knowledge and skills you need to become a successful operator of this process- a slitter operator. **You will learn how to operate and use the systems designed to cut the cores, slit and wind the web, and bundle and package the slit rolls.** The work you do here is vital- you are the last line of defense against quality defects, issues, and problems. When working in the **slitter** and packaging areas, always be vigilant for these issues, which you will learn about later today.



☐ INTRODUCTION TO THE SLITTER

eLearning Module (40 minutes)

This course will introduce you to the **slitter area**. The **slitter area** is responsible for receiving parent rolls from the mainline and slitting the web into strips that are wound around cores prepared by the [removed]. We call these wound strips of web "**slit rolls**". These **slit rolls** are taped, measured, and labeled before they are sent to the packaging area.

The next time you interact with the slitter, you will be able to:

- Identify the external and internal parts of the **slitter**
- Identify the different types of the slitter machine rolls (lead roll, load cell roll, bowed roll, etc.)
- Identify the thread path of the web
- Describe the basics of shooting a recipe
- Identify the operational cycle of the **slitter**

Key Points to Remember:

- Use cut resistant gloves when working with knives
- The web is slit in the knife group area
- The thread path of the web passes first through the lead rolls and then the load cell, bowed roll, carbon fiber rolls, z-fold roll, and the rider roll.
- When the machine has finished positioning the knives, check for proper setup and operation.
- Measure the distance (mm) from knife-to-knife. Distance = cut width + neck-in value
- Make sure that the knives are cutting properly and yielding the correct widths

When you have completed this module and assessment, you may proceed to the next section.

☐ **I have completed the assessment.**

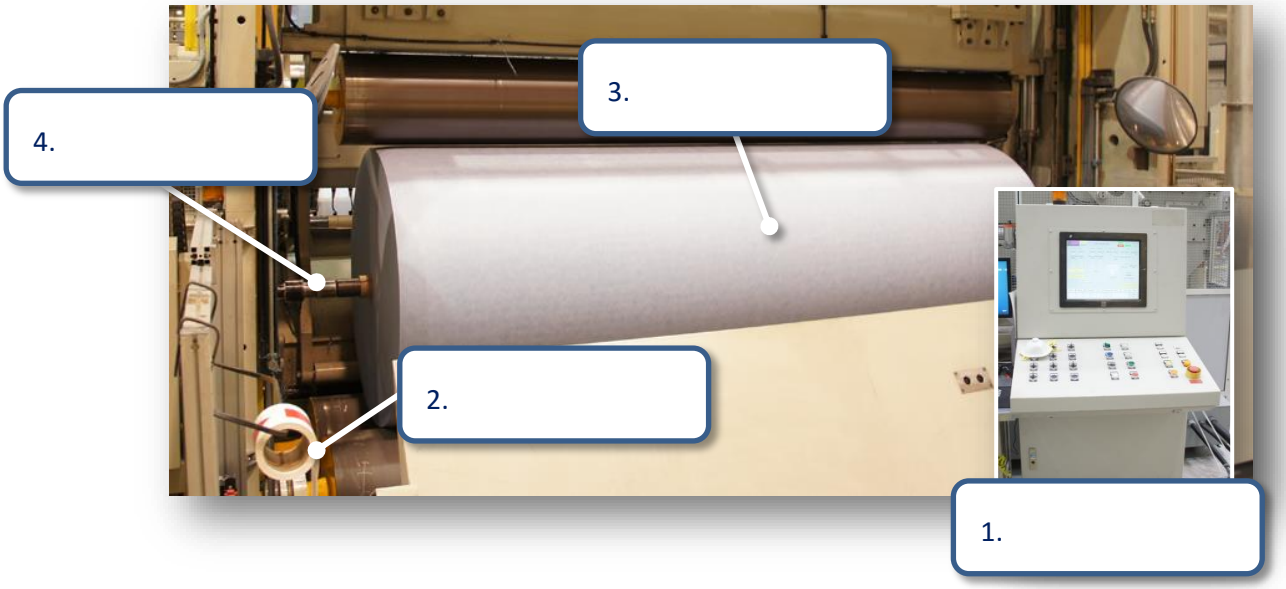
MODULE 1 OBSERVATION- PART 1

Before you can complete any hands-on tasks, you must observe the operation of the slitter and [removed]. In the following sub-sections, you will find information, references, and activities designed to focus your observation toward the most pertinent information. **You may complete these activities in any order.**

☐ PARTS OF THE SLITTER

The slitter is the part of the process where a **completed parent roll** is **unwound, slit,** and then **rewound** into **shippable** roll packs called **bundles**. Let's take look at the different areas of the slitter are so they make sense later on. **Label the images below** and write a **brief description** of what are they for and how will you be using them- be specific and detailed in your answer.

MAIN SLITTER AREA



1. _____

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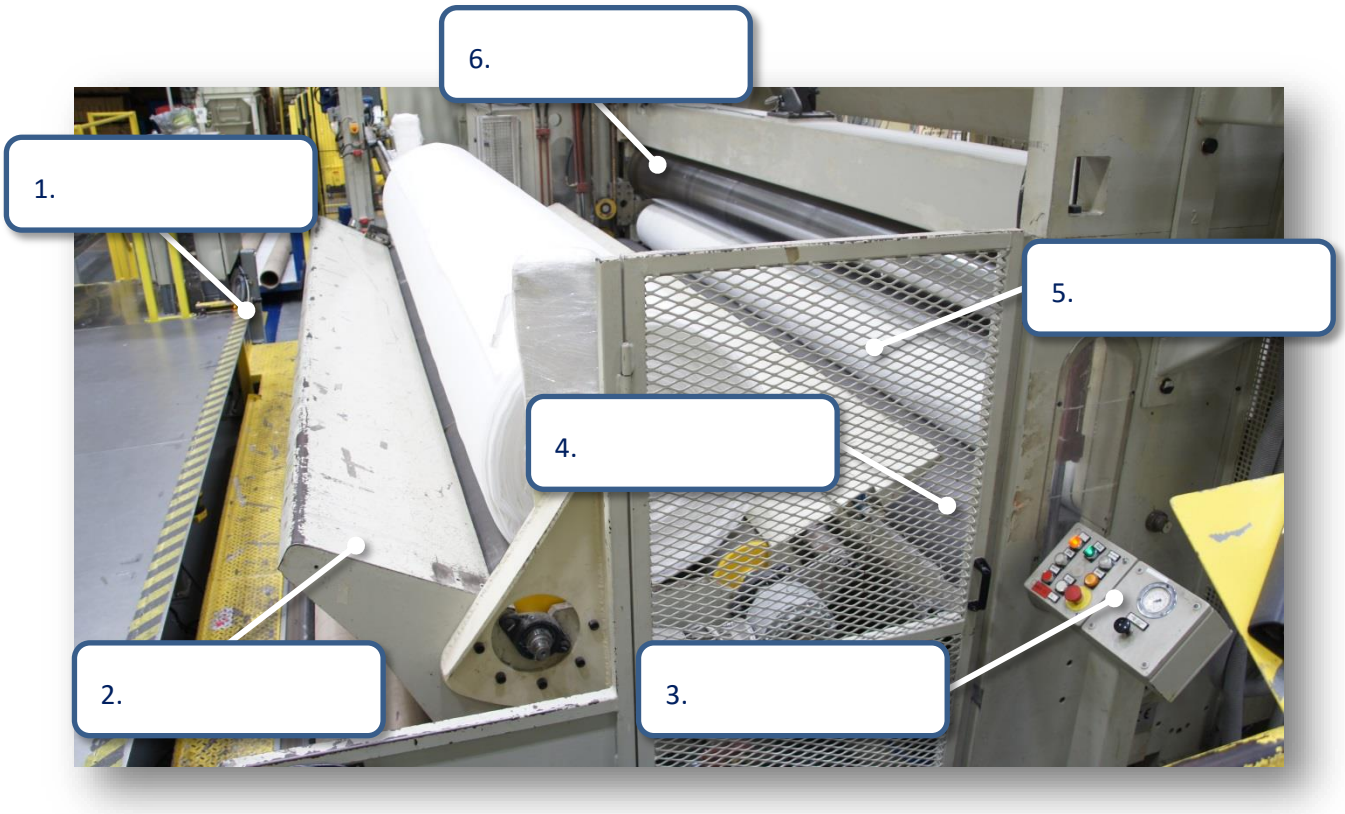
CROSS CUT GROUP AREA

The cross cut group area is where the freshly cut roll will begin to rewind. This is also the area you will be spending a lot of time when threading onto an empty mandrel and core.



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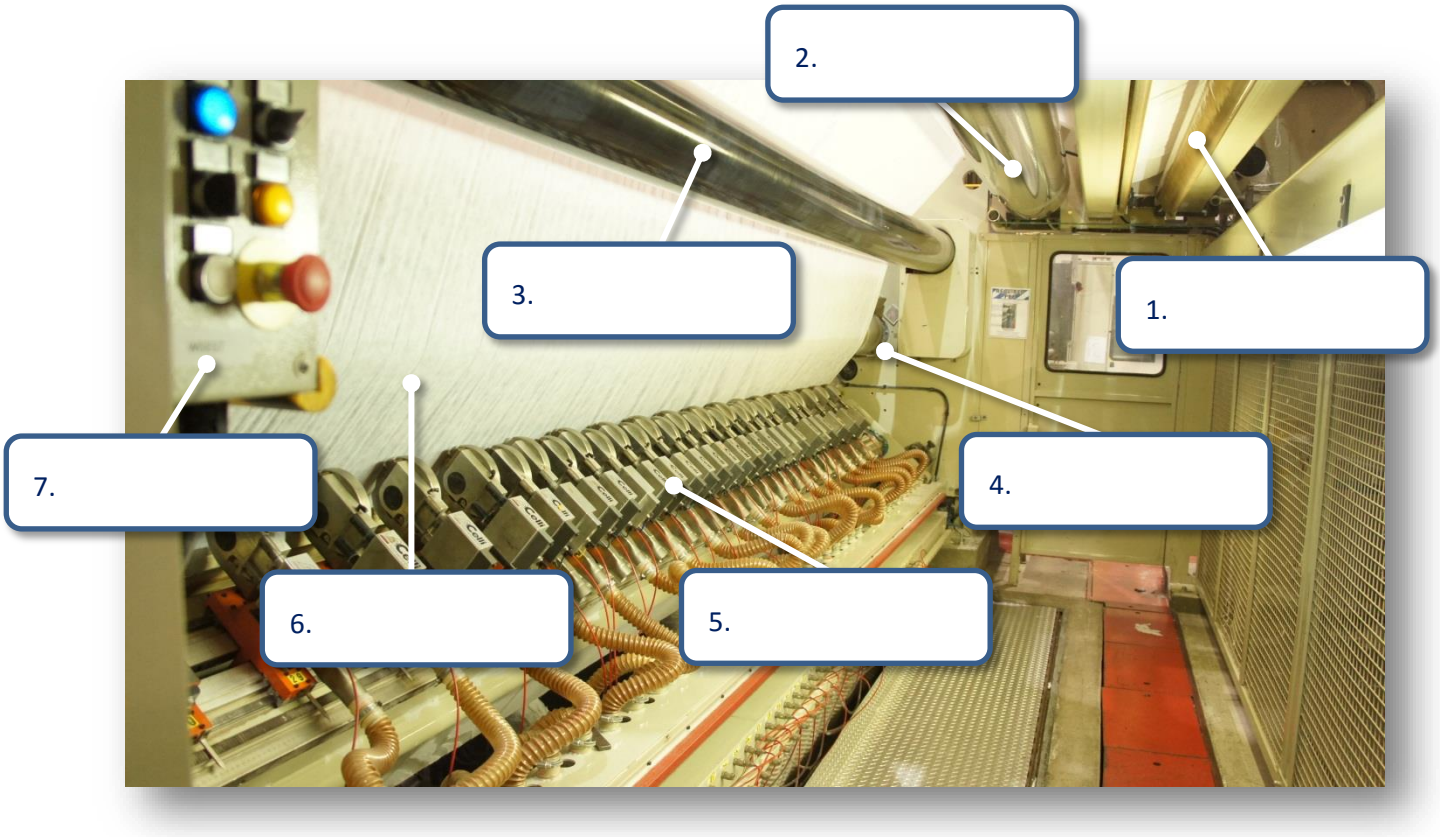
☐ SLITTER KNIFE ROOM PARTS

The Knife Group Area is where the material is cut into sections by the knife groups. This is also where you will be threading from the parent roll and lead rolls as well as where you will be splicing.

1. _____



2. _____

3. _____

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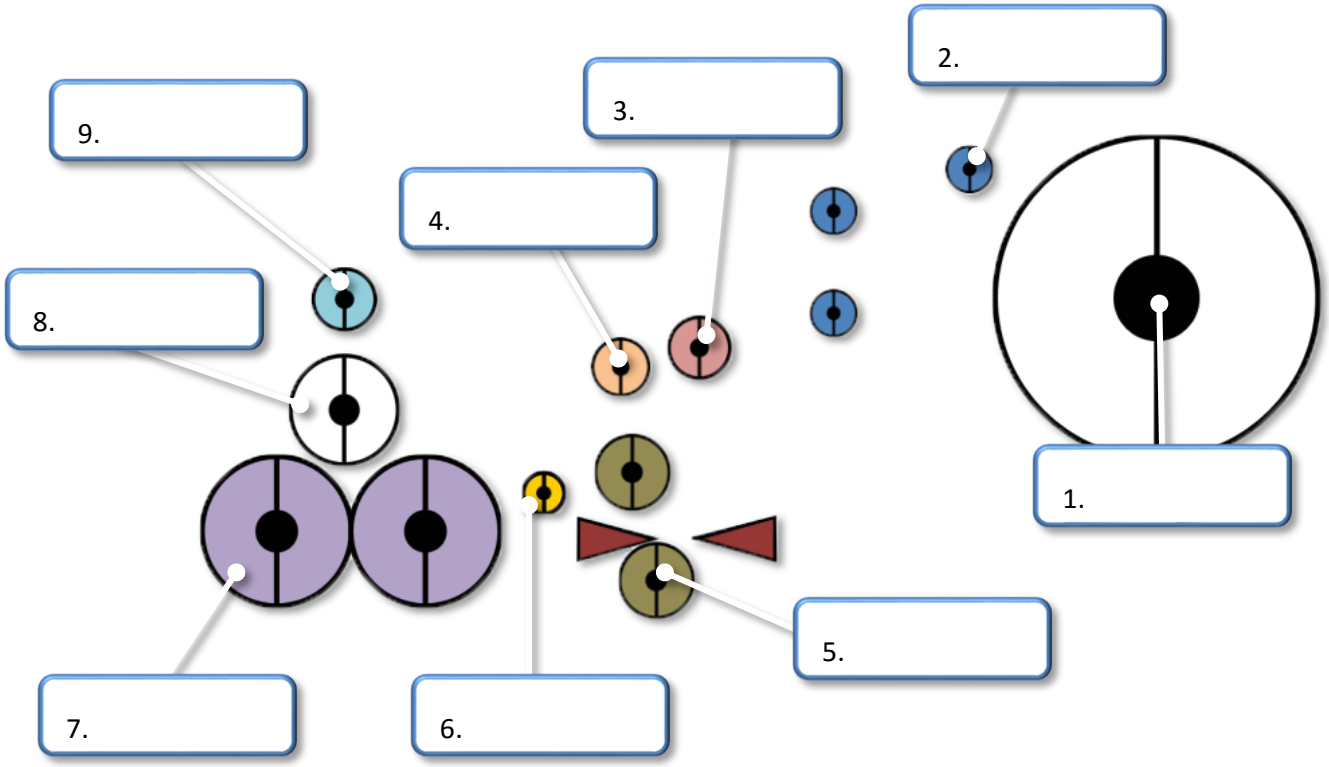
6. _____

7. _____

☐ SLITTER ROLLS AND THREAD PATH

You labeled a few of these in the images above, but let's see how it all fits together in this diagram to see the thread pattern of the web. **Draw the thread path** of the nonwoven web and **label each roll,** then **describe the purpose and function** of each roll on the lines provided.



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8. _____

9. _____

☐ BASIC OPERATION OF THE [REMOVED]

Instructor-led Training (30 minutes)

This course will introduce you to the **[removed]**. These machines are used to cut and prepare **cores** for slit rolls according to the customer specifications listed in the work order. Your trainer will take you to the **[removed]** to learn how to properly place cores onto the core cutter. You will then need to reset the machine and return it to its automatic operational cycle.

After completing this module, you will be able to:

- Inspect core for defects
- Properly place a core onto the core cutter
- Identify the machines of the **[removed]**
- Identify the components that make up the [removed] machines
- Identify the operational order of the **[removed]**
- Reset and start the [removed]

When you have completed this module and assessment, you may proceed to the next section.

Key Points to Remember:

- The [removed] is composed of four key components- the **core cutter, compactor, [removed], and extractor**
- As the bed rolls rotate the core, the core keeper steadies the core while the core cutter slices to recipe specifications with aid of the drive positioner
- The core loading arms transfer the freshly cut cores to the core compactor, which compacts and measures the cores for data used to space the cores by the [removed]
- Inspect the cores for core bend, dented ends, gaps, and other visual defects
- Place the cores onto the bed roll so that the arrows are facing the core end plate
- When loading the core, the safety curtain stops the [removed]'s automatic cycle. After you exit the loading area, you need to reset the [removed] for the automatic cycle to begin

☐ **I have completed the assessment.**

MODULE 1 OBSERVATION- PART 1

Before you can complete any hands-on tasks, you must observe the operation of the slitter and [removed]. In the following sub-sections, you will find information, references, and activities designed to focus your observation toward the most pertinent information. **You may complete these activities in any order.**

☐ [REMOVED] OVERVIEW

Observe the operational cycle of the [removed] until you are ready fill out the questions below. Observe at least one full cycle before you respond.

In the space provided below, draw a small diagram of the [removed] and slitter area. Be sure to include and label the following: core cutter, drive positioner, core compactor, extractor, core loading arms, shaft unloader, [removed], [removed] robot, slitter, and unloader table.

☐ CORE CUTTER PARTS AND CYCLE

Observe at least one cycle of the core cutter- pay attention to all the parts and how they move. If you have trouble remembering the name of a part or its function, scan the barcode below for a diagram.

Below are segments of the core cutter's operational cycle. **Put them in order from 1-4.**

_____ The drive blade in the drive positioner cuts the cores

_____ An Operator places a core on the bed roll

_____ The core loading arms take the cores to the core compactor

_____ An Operator resets the safety curtain and restarts the automatic cycle

How do you place the core? _____

_____

What do you look for before starting the cutting cycle? _____

_____

What do you do if something is wrong once you start the cutting cycle? (E.g. endplate not flush, core is bent or warped, etc.) _____

_____

After the cutting cycle, when the loading arm transfers the core to the extractor tray, what do you do if end pieces of the core fall off? _____

_____

☐ CORE COMPACTOR PARTS AND CYCLE

Observe at least one cycle of the core compactor. Pay attention to the parts and how they move.

Below are segments of the core compactor's operational cycle. **Put them in order from 1-4.**

_____ The cores receive a mandrel from the extractor

_____ The core compactor receives the cut cores from the core cutter

_____ The hook compact compacts the cores

_____ The cores and mandrel are ejected onto the shaft unloader

What is the complete process of placing a core and resetting the [removed]?

_____

_____

_____

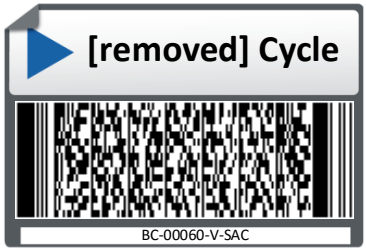
What defects in a core are you checking for before placing them?

_____

_____

_____

☐ [REMOVED] PARTS AND CYCLE



Observe at least one cycle of the [removed]. Pay attention to the parts and how they move and answer the questions below.

What is the purpose of a "[removed]" unit and how will you be using it?

_____

_____

_____

How do you start and stop the [removed] cycle?

_____

How do you reset the core alignment?

_____

Below are segments of the [removed]' operational cycle. **Put them in order from 1-5.**

_____ The [removed] receives the mandrel and cores from the shaft unloader

_____ The shaft positioner pushes the cores and mandrel forward so the pusher can push them into the slitter

_____ The mandrel is inflated by the inflation device

_____ The shaft supports raise to support the mandrel and cut cores

_____ Clamps 1 and 2 space the cores to specific locations

What can you do with the following components in manual mode?

- Head _____
- Inflator _____
- Positioner _____
- Mandrel _____

☐ EXTRACTOR PARTS AND CYCLE

The purpose of the extractor is to deflate and remove the mandrel from a doff as well as insert a mandrel into a core and inflate it. Inflation and deflation is what allows the mandrel to either hold tightly to the core or loosen from it. **Observe at least two cycles of the extractor,** pay attention to all the parts and how they move, and answer the questions below.

What kind of safety measures are in place with the extractor? _____

_____

How do you start the extractor?

_____

How do you put the extractor in manual and why would you need to do this?

_____

_____

Why is the extractor one of the most dangerous pieces of equipment?

_____

_____

Put the segments of the extractor's operational cycle in **order from 1-4.**

_____ The core compactor's inflator inflates the mandrels

_____ The mandrel is extracted from the doff by the wheels

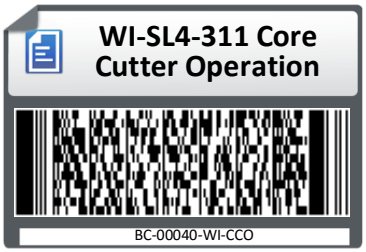
_____ As the mandrel is removed, it is placed directly into the compacted cores

_____ The extractor head moves forward and uses the deflation device to deflate the mandrels

HANDS ON

Once you have completed all the tasks above, you are ready for some hands-on tasks. Make certain that you read the work instructions carefully before performing any task. **You may not perform any work task without the supervision of your training coordinator.** Always follow to his or her directions when performing these tasks for your safety and the safety of those around you.

☐ LOADING CORES ONTO THE CORE CUTTER



You are now ready to perform your first hands on task. **You will be placing cores onto the core cutter during each [removed] cycle and resetting the [removed] to resume automatic operations.** Speak with your training coordinator to work under his or her supervision..

What did you understand better after performing the task that might have been unclear during the observation task earlier?

_____

_____

_____

What jumped out at you that you didn't know/notice before?

_____

_____

Reflect on your task

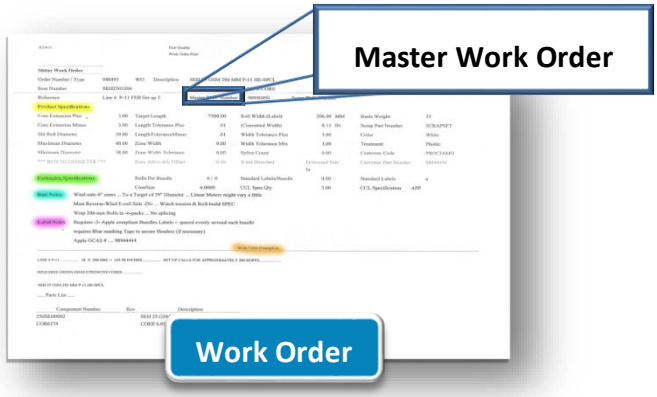
Training Instructor Feedback	
Trainee Initials	**Training Coordinator Initials**

☐ INTERPRETING WORK ORDERS

eLearning Module (30 minutes)

The **work order** represents the specifications of the product the slitter is currently working on. Process Engineers carefully constructs these from customer specifications. Following these specifications is extremely important as variations from the **work order** could lead to **quality incidents**. It is a good idea to make reading the **work order** one of the **first tasks** of your shift.

The next time you read a work order, you will be able to:



- Identify the master **work order** number
- Identify the raw materials used **(work order description)**
- Identify slit roll and core parameters and tolerances (**Product Specifications**)
- Identify **Packaging Specifications**
- Identify Compliant Labels and Instructions (**Run Notes** & **Label Notes**)

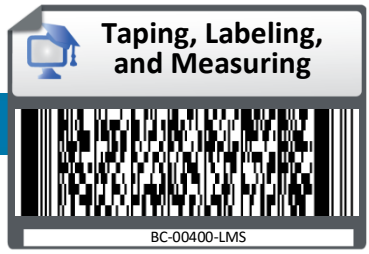
Key Points to Remember:

- The Master Work Order Number is at the top of the work order in the references section
- Receive your work orders from a Line Manager, Scheduler, Lead Operator, or Process Engineer
- The Work Order Description contains information concerning Raw Materials (core type, material, headers, etc.)
- Header sizes are directly related to the diameter of the roll; cap both ends of a bundle
- The three main core sizes are 3 inch, 6 inch, and 6 ¾ inch
- Measure diameter horizontally, not vertically
- Product Specifications contain slit roll and core parameters and tolerances

- Packaging Specifications contain information related to Rolls per Bundle, Core Size, and Customer Compliant Labels/Standard Labels
- Run Notes contain special instructions concerning the run
- Label Notes contain special instructions concerning labeling bundles and slit rolls

When you have completed this module and assessment, you may proceed to the next section.

☐ I have completed the assessment.



☐ TAPING, LABELING, AND MEASURING

eLearning Module (30 minutes)

Taping, **labeling**, and **measuring** are among the simplest and most common tasks you will perform in the slitter area. This process is an extremely important part of the **quality assurance process** at [removed]. Each doff (slit roll) that comes out of the slitter must be **taped** once the excess fabric is cut away. The slitter operator then **labels** each roll, adding any additional "customer compliant **labels**." The packaging Operator will use these **labels** to separate good rolls from the bad-accuracy is important. You will also learn how to use the MES system as it relates to these functions in a later lesson.

The next time you see a slit roll, you will be able to:

- Properly tape, label, and measure
- Use the MES system concerning taping, labeling, and measuring
- Enter taping, labeling, and measurement data into Quality Windows

Key Points to Remember:

- Use required tape in Label Notes if specified
- Place labels below the flap end after taping
- Use any specified Customer Compliant Labels from the Label Notes
- For width, measure anything below 1000mm with Vernier calipers, and anything above 1000mm with a tape measure
- Measure the diameter with a tape measure horizontally, not vertically

- Verify the information in the MES system coincides with the work order as well as current recipe
- Enter data from the slitter into Quality Windows for verification concerning process control

When you have completed this module and assessment, you may proceed to the next section.

☐ **I have completed the assessment.**

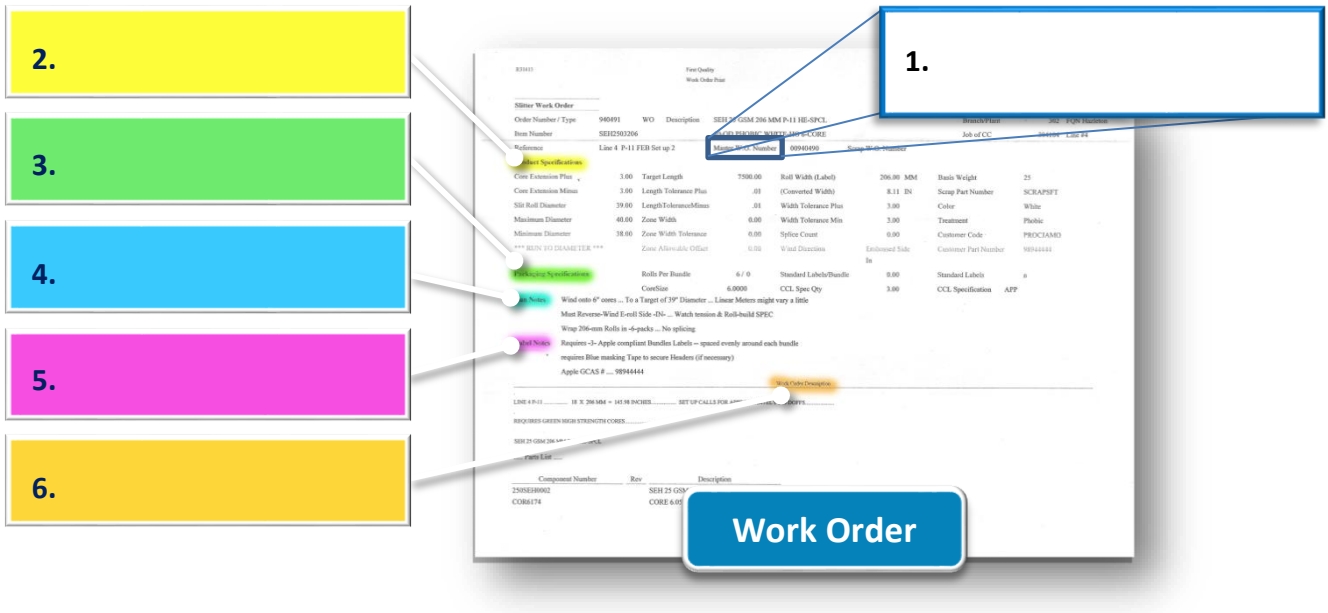
MODULE 1 OBSERVATION- PART 2

Before you can complete any hands-on tasks, you must observe the operation of the slitter and [removed]. In the following sub-sections, you will find information, references, and activities designed to focus your observation toward the most pertinent information. **You may complete these activities in any order.**

☐ WORK ORDERS

As you learned 1n Module 1, it is good practice to read the work order before beginning work for your shift. Even just skimming over the details will give you a good idea of what you are working on.

Label the appropriate sections in the boxes below. When you are finished, describe how you would use each section.



1. _____

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☐ TAPING AND LABELING

WI-WR3-102 Labeling Requirements

Every doff wound in the slitter must be prepared and labeled by a slitter team. **Observe a slitter team taping and labeling doffs for at least half an hour.** These steps are highly important to the quality efforts at [removed]. Watch their technique as they tape rolls and apply labels.

How should you orient your slit roll labels and where on the roll should you place them?

Where do you **start labeling** and with **what label?**

How do you know **what kind of tape** and **customer compliant labels (CCL)** to use?

What happens/could happen if you **label incorrectly**?

What are the steps of the doffing procedure?

☐ MEASURING

After a new parent roll has been loaded into the slitter, and the first doff produced, you will need to take measurements to ensure the doff is meeting customer specifications.

Observe a slitter team measuring the first doff of a parent roll and answer the following questions.

Where and *when* do you take **edge trim measurements?**

_____

_____

Which tool(s) do you use to measure **slit roll width** and why?

_____

Where do you record measurements?

_____

What are the measurements used for after you record them?

_____

What are the different tolerances for your measurements?

_____

What do you do if the roll(s) isn't up to specification? (be specific)

_____

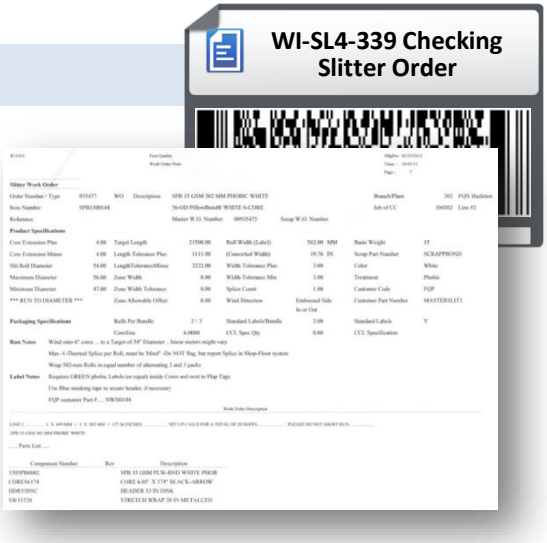
_____

_____

HANDS ON

Once you have completed all the tasks above, you are ready for some hands-on tasks. Make certain that you read the work instructions carefully before performing any task. **You may not perform any work task without the supervision of your training coordinator.** Always follow to his or her directions when performing these tasks for your safety and the safety of those around you.

☐ INTERPRET A WORK ORDER



When you first start a shift, begin by reading the current work order. The work order will tell you what product you are making, its specifications, vital process information, and customer compliant information. These are all important to keep in mind while working. Get into the habit of checking the work order now. **Scan the barcode to see a diagram of the work order.**

Describe the information you would find on a work order.

_____

_____

_____

Print and attach a current work order. From the work order currently on your line, identify and write down the following pieces of information:

Order Number/Type:_____

Item Number: _____Core Extension Allowances: _____ Core Size:_____

Doff Diameter Allowances:_____Product Color: _____Treatment: _____

Customer Code:_____Customer Part Number: _____ Wind Direction:_____

Work Order Description:_____

☐ TAPING AND LABELING

You will now practice taping and labeling the rolls of a doff. Speak with your training coordinator to work under his or her supervision. Remember to pay attention to **quality standards**, proper **order** and **label placement**, and be on the lookout for **quality defects**.

In the next task you will **measure**- be sure to keep this in mind while taping and labeling if the opportunity arises to start measuring

What did you understand better after performing the task that might have been unclear during the observation task earlier? _____

_____

What jumped out at you that you didn't know/notice before? _____

_____

Reflect on your task	
Training Instructor Feedback	
Trainee Initials	**Training Coordinator Initials**

☐ MEASURING

After a new parent roll has been loaded into the slitter, and the first doff produced, you will need to take measurements to ensure the doff is meeting customer specifications. Follow your instructor to the line, **take measurements**, **record the measurements** appropriately**,** and **answer the questions below**.

What did you understand better after performing the task that might have been unclear during the observation task earlier?

_____

_____

_____

What jumped out at you that you didn't know/notice before?

_____

_____

_____

Reflect on your task	
Training Instructor Feedback	
Trainee Initials	**Training Coordinator Initials**

QUALITY CHECKS AND TASK MEDITATION

Once you have completed your hands-on taping, labeling, and measuring tasks, answer the following questions.

What defects did the slitter team find during your observations or hands on tasks? What did they do about the issue? If none, answer N/A.

_____

_____

_____

_____

What did a good roll look like compared to an edge trim or scrap roll? Compare and contrast them with an ideal good roll.

_____

_____

_____

_____

Reflect on your experiences taping, labeling, and measuring. What did you learn from the tasks that may not have been clear to you before?

_____

_____

_____

_____

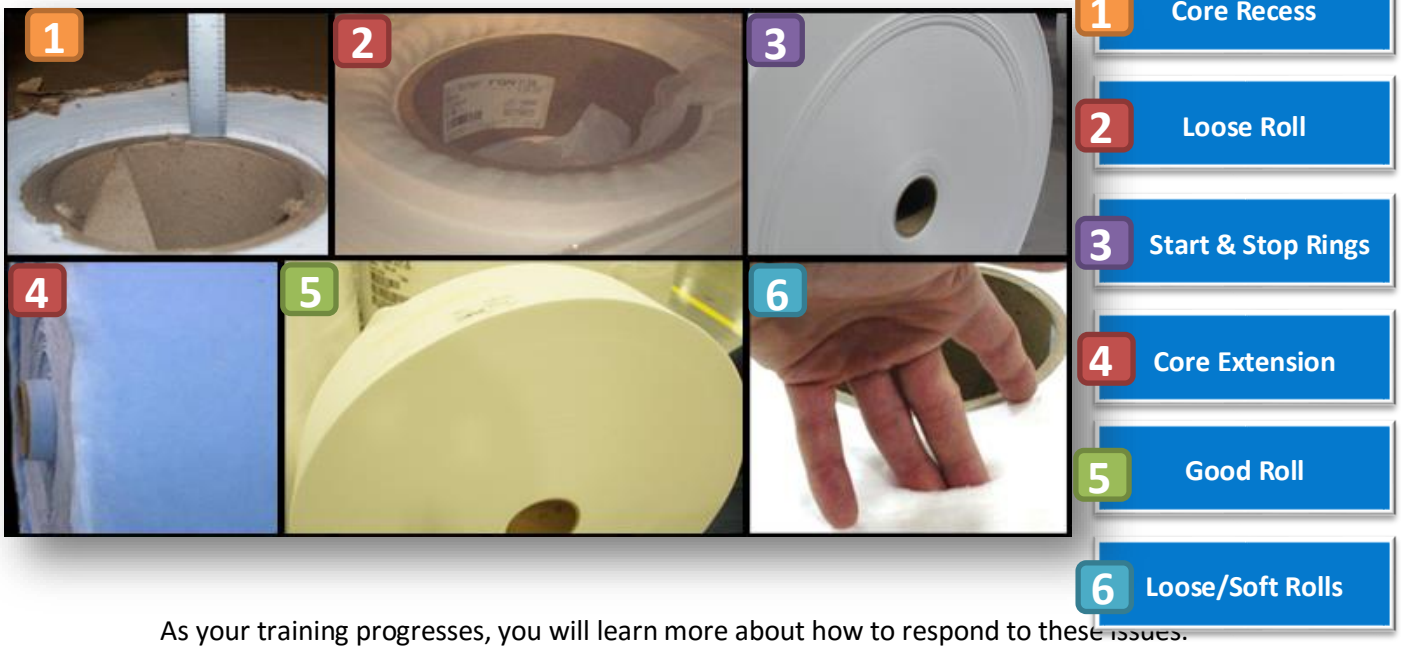
☐ QUALITY DEFECTS

Quality Defects

BC-00400-LMS

eLearning Module (30 minutes)

Quality defects are any kind of problem that makes the non-woven fabric fall outside of the customer specifications. It is of paramount importance that none of these defects makes it to the customer. You can do your part by identifying these issues and informing your slitter lead.



As your training progresses, you will learn more about how to respond to these issues.

After completing this module, you will be able to:

- Identify common quality defects
- Identify the causes of defects

Key Points to Remember:

- Start and stop rings are created when stopping and starting the slitter
- Rolls should easily separate from one another
- Protruding material may be observed on the edges of rolls
- Ragged edges, similar to shredding, is when rolls are battered along the entire edge

When you have completed this module and assessment, you may proceed to the next section.

☐ **I have completed the assessment.**

MODULE 1 OBSERVATION- PART 2

Before you can complete any hands-on tasks, you must observe the operation of the slitter and [removed]. In the following sub-sections, you will find information, references, and activities designed to focus your observation toward the most pertinent information. **You may complete these activities in any order.**

☐ QUALITY CHECKS

As a slitter and packaging Operator, you are the last line of defense against quality defects. It is of the utmost importance that you follow the quality guidelines and checking procedures. Make certain that all quality standards are met when operating in the slitter area.

Start/stop rings, diameter differential, core extension/indentation, contamination, and gauge bands are examples of quality defects. In a moment you will find out more about these, but before we do that, what are some other types of defects you may find?

_____

_____

_____

_____

_____

_____

Below are five examples of defects that a slitter operator might find while operating the slitter. Find out what these defects look like, what could cause them, and how you would resolve this issue for this doff and the next, and then **fill in your answers in the tables below.**

Defects	Defect's Description
Start/Stop Rings	
Diameter Differential	
Core Extension/Indentation	
Contamination	
Gauge Bands	

Defects	Potential Causes
Start/Stop Rings	
Diameter Differential	
Core Extension/Indentation	
Contamination	
Gauge Bands	

Defects	Potential Solution
Start/Stop Rings	
Diameter Differential	
Core Extension/Indentation	
Contamination	
Gauge Bands	

☐ HOUSEKEEPING

When working in the slitter area, you will occasionally have time with nothing specific to do. In these situations, make certain the slitter area is clean and orderly. Good housekeeping is not just about having a clean work environment; it is also about making your work area safe. Dust and dirt can be a slipping hazard, and if allowed to accumulate in out of reach places, can pose a risk of igniting from the heat of the machines. Dust can also interfere with the operation of the slitter knives.

Standard Housekeeping tasks:

- Sweep the slitter area
- Clean the slitter computers and desk area
- Wipe down the unloader table
- Blow dust off of the slitter knives
- Empty the trash cans
- Follow the cleaning list for your line
- Check for common contaminants

What are some common contaminants that could come out of the slitter?

_____

_____

_____

What are some preventative housekeeping steps to keep contaminants from affecting doffs?

_____

_____

_____

How do you clean a platform?

_____

_____

_____

It is important not to neglect this aspect of being a slitter operator. Not only is a clean work area safer for you and your co-workers, it also prevents quality issues. Clean your work area frequently!

MODULE 2 OBSERVATION

Before continuing to this section, you must complete all previous activities and sections. In this section, you will be making observations about the material you will learn tomorrow. Read the information below before continuing.

The product created on any line is tracked by a computer system known as the **MES**. The MES system tracks a line's production and is used by the mainline displays, slitter user interfaces, packaging user interfaces and the bundling user interface. As an Operator in the slitter area, you will enter information into the MES to activate orders, track doffs and rolls, and select cut layouts to be shot into the slitter. When interacting with rolls and doffs, you must make sure that everything is updated in the MES system properly.

On the next day of your training, you will learn the following:

- How to activate a master slitter order
- Load a parent roll
- Create a doff record
- Print the labels that you have been applying to the rolls of a doff

For an hour, observe a slitter operator entering information into the MES system at the computer. When a new parent roll is loaded, observe how the slitter team threads the web from the parent roll into the system, splices it, and resumes slitter operation.

When is it necessary to load a new parent roll?

_____

_____

_____

Which machines load a new parent roll on your line?

_____

_____

_____

List the steps an Operator takes when loading a new parent roll.

_____

_____

_____

Observe an Operator creating a new doff in the MES system. What steps does he or she take?

_____

_____

_____

_____

When are labels printed?

_____

_____

_____

_____

If an Operator ran into any problems with the parent roll or MES, how did they resolve the issue?

_____

_____

_____

MODULE 1 REFLECTION

Complete this section only after you have completed all other sections.

Congratulations! You have completed your first day of training! You have taken the first crucial step toward becoming a slitter operator. This marks the beginning of your journey here at [removed]. Before placing your guide into the slot on the training office, please answer the following reflection questions.

Consider everything you have learned today from the courses and hands-on training. List all the areas and skills you are confident you have mastered today.

_____

_____

_____

_____

It is normal not to master everything all at once. List all the areas that you feel you need to review or improve upon. Be sure to bring these up during the Module 2 review session!

_____

_____

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_____

Offer any further thoughts and reflections you wish to share with your trainer.

_____

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_____

SLITTER AREA LINE 4
MODULE 1