

BASIC TEXTILE OPERATIONS

NTQF LEVEL -I

Learning Guide -42

Unit of Competence: - perform spinning operations

Module Title:- perform spinning operations

LG Code: IND BTO1 M11 LO4-LG-42

TTLM Code: IND BTO1 TTLM 0919v1

LO 4: Complete operation



Instruction Sheet	Learning Guide #-
--------------------------	--------------------------

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- Doffing and replacing products
- Unloading and dispatching products to next process
- Completing area clean
- Completing production records and other documentation

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, upon completion of this Learning Guide, **you will be able to –**

- Doff and replace products
- Unload and dispatch products to next process
- Complete area clean
- Complete production records and other documentation

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 20.
3. Read the information written in the “Information Sheets 1”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1” **in page -**.
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-check 1).
6. If you earned a satisfactory evaluation proceed to “Information Sheet 2”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #1.
7. Submit your accomplished Self-check. This will form part of your training portfolio.



Information Sheet-1	Doffing and replacing products
----------------------------	---------------------------------------

1. Doffing and replacing products

The invention has for its object to provide in a "ring spinning, doubling or twisting machine, improved means for removing or doffing the yarn packages from the spindles at the completion of the spinning operation, i.e. when the build of a full yarn package is complete, such means being applicable whether the relative reciprocatory motion between the spindles and the rings necessary for the formation of the yarn packages is effected by raising and lowering the Spindle rail in relation to a stationary ring rail, or by reciprocating movement of the ring rail in relation to a stationary spindle rail, or by a combined movement of both these elements, in opposite directions. In a ring, spinning, doubling or twisting unit according to the invention, I provide mechanism for doffing the yarn package, comprising a carrier member detachably mounted on the Spindle to form a support, for the yarn package wound there on, said carrier member being capable of axial and rotary movement relatively to the spindle, means for arresting rotation of the carrier member when the package reaches the doffing position, a catch on the carrier member for engaging the yarn, so that, the carrier member being arrested and the spindles briefly rotated, the yarn is drawn taut at the base of the package, means for severing the yarn. when so tautened, and interceptor, means for retaining the carrier member at the subsequent separation of the spindle and the ring so that the yarn package is Supported with freedom for doffing by lateral displacement. The yarn-engaging catch and the yarn-Severing means may both be mounted on the carrier member in such relationship. that when the yarn is caught by the former, it is drawn taut across. acutting edge.

Operating Ring Frame for Doffing:

- ❖ To bring correct color coded empty spinning cops in the trolleys
- ❖ To keep the trolleys near the Ring frame machine ready for doffing.
- ❖ Identify the machine ready for doffing
- ❖ Reach the doffing spot(machine ready for doffing) as per the instructions of jobber
- ❖ ensure the machine is completely stopped
- ❖ remove the full yarn cop from spindle and replace it with an empty cop from the cop trolley
- ❖ ensure the empty cop is properly mounted in the spindle



- ❖ repeat the doffing activity for specified number of spindles as instructed by your superior
- ❖ Gait the empty cop with the same running yarn for continues working.
- ❖ Do the doffing at good speed and keep the full cops in the trolleys
- ❖ Handle and transport the full cops properly to the storage area.
- ❖ cover the doffed ring cops if needed
- ❖ ensure cleanliness at work place
- ❖ Apart from these above doffing activities, as per the instructions of supervisor the doffer has to attend to Ring frame machine for creeling of Roving bobbins, piecing broken roving, piecing the yarn in case of yarn breakage, traveler changing and cleaning of machine etc
- ❖ Ring frame doffer must also know the ring frame operations



Fig.4.1. doffing of ring frame



Self-Check -1	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What is doffing? (5 pts.)

Answer sheet

Note: Satisfactory rating - 3 points

Unsatisfactory - below 3 points

Score = _____
Rating: _____

Name: _____

Date: _____

1. _____



Information Sheet-2	Unloading and dispatching products to next process
----------------------------	---

2. Unloading and dispatching products to next process

In a ring, spinning, doubling or twisting unit according to the invention, I provide mechanism for doffing the yarn package, comprising a carrier member detachably mounted on the Spindle to form a support, for the yarn package wound there on, said carrier member being capable of axial and rotary movement relatively to the spindle, means for arresting rotation of the carrier member when the package reaches the doffing position, a catch on the carrier member for engaging the yarn, so that, the carrier member being arrested and the spindles briefly rotated, the yarn is drawn taut at the base of the package, means for severing the yarn. When so tautened, and interceptor, means for retaining the carrier member at the subsequent separation of the spindle and the ring so that the yarn package is Supported with freedom for doffing by lateral displacement. The yarn-engaging catch and the yarn-Severing means may both be mounted on the carrier member in such relationship. that when the yarn is caught by the former, it is drawn taut across a. cutting edge of the latter. The carrier member preferably provides a shrouded seating for the base of the bobbin, pirn or like tube on which the yarn package is wound on the spindle, said seating being of such character...that when the spindle, is withdrawn from the package the latter will be predisposed to topple laterally as the lateral Support hitherto afforded by the spindle is removed. The said interceptor may take the form of a narrow plate or bar supported slid ably beneath the ring rail and extending throughout the length of the machine or of a unitary section thereof, with a connection at one end to means by which the plate or bar may be reciprocated so that projecting portions thereof are engaged with or disengaged from a flange on each package carrier member. Preferably, two such plates are provided, being disposed in spaced parallel arrangement one in front of and the other behind the Spindle axes, with a yoke connecting Said plates at one end to the means employed for their reciprocatory movement. The manner in which the invention may be carried into effect is hereinafter described with reference to the accompanying diagrammatic drawings which illustrate an embodiment of the invention as applied to a ring spinning machine.

--	--



Self-Check -2	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. How products are unloaded in ring frame machine? (6 pts.)

Note: Satisfactory rating - 3 points

Unsatisfactory - below 3 points

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

Short Answer Questions

1. _____



Information Sheet-3

Completing area clean

3. Completing area clean

Cleaning the ring frame/rotor & Waste disposal

Carry out cleaning of ring frame/rotor as follows or as instructed by supervisor:

- Always safely carry out cleaning activities
- Carryout cleaning activities in creeling zone, drafting zone suitable equipment like brush.
- Periodically remove the dust from creeling area.
- Remove the soft waste piled up if any from creeling, drafting and delivery zone.
- Clean the doors and covers of the machines at periodical intervals and keep them free from fluff accumulation.
- Check the wastes collected from different parts of machine are deposited in the respective bins
- Keep the department clean.



Self-Check -3	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Write the uses of cleaning the area of spinning. (8 pts.)

Note: Satisfactory rating - 5 points

Unsatisfactory - below 5 points

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date: _____

1. _____



Information Sheet-4	Completing production records and other documentation
---------------------	---

Fault Reporting is a maintenance concept that increases operational availability and that reduces operating cost through three mechanisms.

- Reduce labor-intensive diagnostic evaluation
- Eliminate diagnostic testing down-time
- Provide notification to management for degraded operation

Maintenance requires three actions.

- Fault discovery
- Fault isolation
- Fault recovery

Fault discovery requires diagnostic maintenance, which requires system down time and labor costs. Down time and cost requirements associated with diagnostics are eliminated for every item that satisfies the following criteria.

- Automated diagnostic
- Instrumented for remote viewing
- Displayed in the vicinity of supervisory personnel

4.1. Implementation

Fault reporting is an optional feature that can be forwarded to remote displays using simple configuration setting in all modern computing equipment. The system level of reporting that is appropriate for Condition Based Maintenance are critical, alert, and emergency, which indicate software termination due to failure. Specific failure reporting, like interface failure, can be integrated into applications linked with these reporting systems.

Other kinds of fault reporting involves painting green, yellow, and red zones onto temperature gages, pressure gages, flow gages, vibration sensors, strain gages, and similar sensors. Remote viewing can be implemented.



4.2. Benefit

The historical approach for Fault discovery is periodic diagnostic testing, which eliminates the following operational availability penalty.

- Fault reporting eliminates maintenance costs associated manual diagnostic testing.
- Labor is eliminated in redundant designs by using the fault discovery and fault isolation functions to automatically reconfigure equipment for degraded operation.
- Maintenance savings can be re-allocated to upgrades and improvements that increase organizational competitiveness.

4.3. Detriments

Faults that do not trigger a sustained requirement for fault isolation and fault recovery actions should not be displayed for management action.

As an example, lighting up a fault indicator in situations where human intervention is not required will induce breakage by causing maintenance personnel to perform work when nothing is already broken.

As another example, enabling fault reporting for Internet network packet delivery failure will increase network loading when the network is already busy, and that will cause total network outage

XX

1.1. Fault records

Record means that compile a data or datum of something; either production, quality, raw material, absenteeism, faults or other. And it can be recorded indifferent ways. Let see the following hourly fault record interims of table.

- record the quality of product
- record the amount products
- record specification of product against to standards
- record the limitation of products
- record the strength and weakness of products
- confirm the products against to all quality parameters



Table: 4.1: daily fault record and report format

Faults	Working hours								Total product
	1 ST Hr	2 nd Hr	3 rd Hr	4 th H Hr	5 th Hr	6 th Hr	7 th Hr	8 th Hr	
slubs									
Neps									
Snarl yarn									
Thick and thin places									
Soft yarn									
Oil stained yarn									
Kitty yarn effect									



Operation Sheet 1	Yarn production by ring frame
--------------------------	--------------------------------------

Method of-----1-----:

Step 1- creel the roving bobbins appropriate holders

Step 2- guide the roving in to drafting arrangement

Step 3- attenuate by drafting rollers

Step 4- leave up on front roller of drafting arrangement

Step 5- decide twist direction

Step 6- impart twist

Step 7- perform winding in spindle

Step 8- then perform doffing

Step 9- finally check quality of yarn

Operation Sheet 2	Yarn production by open end/rotor
--------------------------	--

Procedures for -----2-----

Step 1- feed the sliver by sliver guide to the feed roller

Step 2- open the sliver by opening roller

Step 3- transport the opened fiber to the rotor by centrifugal force and vacuum

Step 4- collect fiber in the rotor groove

Step 5- form yarn (twist by rotor rotation)

Step 6- wind the yarn on the package

Step 7- remove package from the machine

Step 8- test the quality of the yarn



Operation Sheet-3	Testing yarn count in spinning process
--------------------------	---

Techniques for-----3-----:

Materials needed: analytical balance, wrap reel and calculator

Step 1- make lea by wrap reel

Step 2- weight the lee by analytical balance

Step 3- converts the weight gram to pound

Step 4- now the data put in equation (count= length in yard * weight unit.)

840* weight in pound

Step 5- calculate by the equation

Step 6- finally calculate average count for different cones.

LAP Test	Practical Demonstration
-----------------	--------------------------------

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1. Prepare yarn by ring spinning process (roving slivers are given)

Task 2. Prepare yarn by open end/rotor process (draw frame cans are given)

Task 3. Test the count of produced yarn.



List of Reference Materials

- 1- <Process control and yarn quality in spinning>, Dr.Thilagavalthi, 2009.
- 2- <Feasibility study for cotton spinning mill>, a study undertaken by gherzi on behalf of UNIDO.
- 3- <End breakage in rotor spinning> Indian Institute of technology Delhi, 2004.
- 4- WEB ADDRESSES (<https://www.testextile.com>)