



Model Curriculum

QP Name: Ring Frame Operator
(Options : Manual doffing/ Automatic doffing)

QP Code: TSC/Q0205

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

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Table of Contents

Training Parameters.....	3
Program Overview	4
Training Outcomes	4
Compulsory Modules	4
Optional Modules	6
Module Details.....	7
Module 1: Introduction to spinning mill and ring frame operator responsibilities.....	7
Module 2: Shift handover and takeover shift in ring frame department	8
Module 3: Transport and creel roving bobbins at ring frame machine	9
Module 4: Replace bobbin and guide roving end in passage	10
Module 5: Patrol and identify the yarn breakages.....	11
Module 6: Piecing broken yarn – Simple Breaks	12
Module 7: Piecing broken yarn – Other Breaks	13
Module 8: Checking the passage and quality of pieced yarn	14
Module 9: Perform cleaning and other tenting activities	15
Module 10: Maintaining the work area, tools and machines.....	16
Module 11: Greening and energy conservation in textile sector	17
Module 12: Health, safety and emergency response at workplace	18
Module 13: Organizational standards and policies.....	19
Module 14: Teamwork, trust and communication	20
Module 15: Adaptability.....	21
Module 16: Prepare for manual doffing operation.....	22
Module 17: Perform manual doffing operation.....	23
Module 18: Prepare for automatic doffing operation	24
Module 19: Perform malfunctions & other responsibilities during automatic doffing at ring frame	25
Trainer Requirements	26
Assessor Requirements	27
Assessment Strategy	28
References	30
Glossary	30
Acronyms and Abbreviations	31

Training Parameters

Sector	Textile
Sub-Sector	Spinning - Textiles
Occupation	Spinning
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8151.0600
Minimum Educational Qualification and Experience	Basic Literacy & Numeracy 1Year of experience in a spinning mill, desirable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	22/10/2020
Next Review Date	22/10/2025
NSQC Approval Date	05/08/2015
QP Version	1.0
Model Curriculum Creation Date	22/10/2020
Model Curriculum Valid Up to Date	22/10/2025
Model Curriculum Version	1.0
Minimum Duration of the Course	300 Hours
Maximum Duration of the Course	420 Hours

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

- Take charge and hand over shift to the shift supervisor in the ring frame department.
- Creel and replenish roving bobbins at ring frame machine.
- Piece broken yarn at ring frame machine.
- Perform yarn package doffing (manual/automatic) and cleaning activities at ring frame machine.
- Maintain work area, tools and machines as per guidelines.
- Follow greening and energy conservation activities as per guidelines.
- Describe the importance of health, safety and security at workplace.
- Communicate and work effectively in a team.
- Comply with organizational and industry standards.

Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	04:00				04:00
Module 1: Introduction to Spinning Mill and Ring frame operator responsibilities	04:00				04:00
TSC/N0218: Carryout shift change, bobbin change, piecing and tenting responsibilities in Ring frame department Version 1.0 NSQF Level - 4	65:00	151:00			216:00
Module 2: Shift handover and takeover shift in Ring frame department	06:00	14:00			20:00
Module 3: Transport and creel roving bobbins at Ring frame	7:00	13:00			20:00
Module 4: Replace bobbin and guide roving end in passage	12:00	28:00			40:00
Module 5: Patrol and identify the yarn breakage	04:00	10:00			14:00

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Module 6: Piecing broken yarn – Simple breaks	10:00	34:00			44:00
Module 7: Piecing broken yarn – Other breaks	05:00	11:00			16:00
Module 8: Checking the passage and quality of pieced yarn	9:00	13:00			22:00
Module 9: Perform cleaning and other tenting activities	12:00	28:00			40:00
TSC/N9015: Follow machine, safety and organizational guidelines in textile sector Version 1.0 NSQF Level - 4	19:00	46:00			65:00
Module 10: Maintaining the work area, tools and machines	02:00	06:00			08:00
Module 11: Greening and energy conservation in textile sector	02:00	06:00			08:00
Module 12: Health, safety and emergency response at workplace	09:00	23:00			32:00
Module 13: Organizational standards and policies	06:00	11:00			17:00
TSC/N9016: Follow teamwork, adaptability and communication guidelines in textile sector Version 1.0 NSQF Level - 4	05:00	10:00			15:00
Module 14: Teamwork, trust and communication	03:00	07:00			10:00
Module 15: Adaptability	02:00	03:00			05:00
Total Duration	93:00	207:00			300:00

Optional Modules

The table lists the optional modules, their duration and mode of delivery.

Option 1: Ring Frame operator - Manual doffing

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
TSC/N0219: Carryout manual doffing in Ring frame department Version 1.0 NSQF Level - 4	18:00	42:00			60:00
Module 16: Prepare for manual doffing operation at ring Frame	06:00	12:00			18:00
Module 17: Perform manual doffing operation at ring frame	12:00	30:00			42:00
Total Duration	18:00	42:00			60:00

Option 2: Ring Frame operator - Automatic doffing

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
TSC/N0220: Carryout responsibilities while working with automatic doffing Ring frame Version 1.0 NSQF Level - 4	17:00	43:00			60:00
Module 18: Prepare for automatic doffing operation at ring frame	07:00	13:00			20:00
Module 19: Perform responsibilities during automatic doffing at ring frame	10:00	30:00			40:00
Total Duration	17:00	43:00			60:00

Module Details

Module 1: Introduction to spinning mill and ring frame operator responsibilities *Bridge Module*

Terminal Outcomes:

- Describe the basics of staple yarn spinning.
- Explain the position of a ring frame operator in the hierarchy line and type of role to play in a spinning mill.
- Discuss the rules and regulations of spinning mill.

Duration: 04:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the basics of staple yarn spinning i.e. process flow, types of machines involved, material flow, types of fibres used, type of yarn produced, terms and definitions of count, production, efficiency, machine speed, colour code, etc. • Define hierarchy organisation and list out the order of department and people involved in the hierarchy line in a spinning mill. • Describe the roles and responsibilities of ring frame operator. • List out the rules and regulations followed in a spinning mill like shift timing and duration, limits of leave and holidays, etc. 	
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Samples of fibres, yarns, intermediate and finished packages, process flow chart from blow room to finishing department, sample tools and accessories for ring frame, etc, a batch of 25 people seating capacity with a screen, parts of ring frame labelled, sign boards, sample log books and formats	

Module 2: Shift handover and takeover shift in ring frame department

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Prepare and review shift log report and checklist.
- Inspect and report the conditions and requirements of machines, materials and accessories in ring frame department.
- Calculate and prepare ring frame production record.

Duration: 06:00	Duration: 14:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe work shifts in a textile manufacturing unit. • Describe the process of shift handover and shift takeover. • Describe shift checklist, shift log report and its significance. • Read a shift handover log report to understand the work to be done. • Recognize operational tools required to carry out the tenting activities in ring frame department. • Classify the count system followed in a spinning mill. • Distinguish between the different types of waste generated at ring frame and their effect on yarn quality. • Discuss the SOP of taking care of shift and handing over shift in ring frame department. • Discuss the consequence of improper shift takeover and handover. 	<ul style="list-style-type: none"> • Prepare a sample log report of an outgoing shift and a checklist of incoming shift. • Demonstrate the process of taking supply and production stock. • Inspect the condition of raw materials and tools available at production area. • Collect shift details from the previous shift operator by following the SOP. • Demonstrate the shift end activities like cleaning, weighing waste, disposal of waste, etc. • Calculate ring frame machine production and amount pneumafil waste generated.
Classroom Aids:	
Charts, Posters, Projector, Blackboard	
Tools, Equipment and Other Requirements	
Waist bag, waste samples, samples of operational tools, calculator, sample log books and production records, a batch of 25 people seating capacity with a screen, parts of ring frame labelled, relevant charts, sign boards.	

Module 3: Transport and creel roving bobbins at ring frame machine

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Collect and transport full and empty roving bobbins.
- Patrol ring frame machine for the bobbin exhausts.
- Creel roving bobbins in reserve holder.

Duration: 07:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the machine parts in the creel zone and their functioning. • Explain the process and material flow in ring frame. • Describe the process of count and colour code identification for roving bobbins and its importance. • Describe the significance of reserve bobbin holder in creel at ring frame. • Identify bobbin exhaust as per standard method. • Discuss the SOP for patrolling, collecting and creeling bobbins and handling roving bobbin trolley. 	<ul style="list-style-type: none"> • Demonstrate moving, turning and transporting loaded/empty bobbin trolley. • Demonstrate the handling of roving bobbins i.e. take, hold, lift, fix, load/unload at trolleys, etc., as per standard procedure. • Demonstrate the process of removing empty bobbins from reserve holder and creel full bobbin. • Perform cleaning of remnants at exhausted bobbin and store empties as per the standard guidelines.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, samples of full/empty bobbins, bobbin trolley, a batch of 25 people seating capacity with a screen.	

Module 4: Replace bobbin and guide roving end in passage

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Discuss the SOP for bobbin changing and roving threading in ring frame machine.
- Remove and fix bobbins in the creel zone.
- Guide roving end in creel and drafting zone.

Duration: 12:00	Duration: 28:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the machine parts in the drafting zone and their functioning. • Discuss the specifications of roving hank, bobbin weight, etc. • Identify un-drafted roving faults at ring frame machine. • Discuss the significance of SOP for changing roving bobbin and threading end in drafting zone. 	<ul style="list-style-type: none"> • Demonstrate fixing and removing bobbins on umbrella holder in ring frame machine. • Demonstrate threading of roving end through ring frame machine parts as per the standard procedure. • Demonstrate roving waste collection in waist bag/apron pocket.
Classroom Aids:	
Charts, Posters, Projector, Blackboard	
Tools, Equipment and Other Requirements	
Ring frame machine, waist bag, samples of full/empty bobbins, bobbin trolley	

Module 5: Patrol and identify the yarn breakages

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Explain the SOP of patrolling the ring frame machines.
- Patrol around the ring frame machine.
- Identify yarn and roving breakages in ring frame machine.

Duration: 04:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the machine parts in the winding zone and their functioning. • Discuss the contents of checklist of tasks to be carried out during patrolling. • Explain different patrolling types and their importance on reducing pneumafil waste • Discuss SOP for patrolling ring frame machine. • Explain the effects of wrong patrolling method on product quality and machine efficiency. 	<ul style="list-style-type: none"> • Demonstrate patrolling in allocated ring frames. • Inspect spindles to identify the different types of yarn breakages i.e. roving break, yarn break, lapping break, traveller fly out, spindle tape slip, etc.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine	

Module 6: Piecing broken yarn – Simple Breaks

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Perform piecing of simple yarn breaks at various zones in a ring frame machine.
- Explain the SOP of piecing broken yarn in a ring frame machine.

Duration: 10:00	Duration: 34:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the various control measures for reducing the pneumafil wastes. • Discuss the reasons for yarn breakages at Ring frame and methods to reduce yarn breakages. • List different personal protective equipment (PPE) to be used while performing piecing operations. • Discuss the importance of using PPE in ring spinning department. • Discuss the SOP for piecing, remove lapping and traveller change and their importance in achieving product quality and machine efficiency. 	<ul style="list-style-type: none"> • Demonstrate stopping of the running spindle using knee break. • Demonstrate threading yarn end through traveller, ABC ring and lappet hook at different cop stages. • Guide yarn end through traveller, ABC ring and lappet hook with different cop stages. • Demonstrate piecing yarn at nip of the front draft rollers.
Classroom Aids:	
Charts, Posters, Projector, Blackboard	
Tools, Equipment and Other Requirements	
Ring frame machine, cleaning stick, waist bag, traveller, samples of cops with different sizes.	

Module 7: Piecing broken yarn – Other Breaks

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Piece other type of yarn breaks at various zones.
- Dismantle and assemble top cradle set in the drafting zone.
- Explain the SOP of piecing the roving breakage.

Duration: 05:00	Duration: 11:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Differentiate between simple and complex yarn breaks. • Discuss the SOP for roving piecing. • Explain the function of top cradle set in the drafting zone. 	<ul style="list-style-type: none"> • Demonstrate piecing of broken roving as per the standard procedure and guidelines. • Demonstrate dismantling and assembling of top arm, top rolls and top cradle set at ring frame machine. • Select the suitable tools for cleaning at breaks like roller lapping cleaning, pneumafil tube cleaning, drafting zone cleaning, etc. • Demonstrate cleaning of roller lapping. • Demonstrate traveller change for damaged traveller and count change.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, lapping cleaning hook, cleaning stick, waist bag, traveller, top cradle set, samples of cops with different sizes.	

Module 8: Checking the passage and quality of pieced yarn

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Correct the yarn passage after piecing.
- Analyse the piecing quality as per standard guidelines.
- Explain the SOP for inspecting process flow and piecing quality at ring frame operation.

Duration: 09:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the passage of roving and yarn at ring frame machine. • Discuss the significance of quality systems and parameters with specifications practiced in the ring frame department. • Explain the methods used to identify faults at ring frame machine, their causes and procedures to correct the faults. • Describe the different types of waste generated like pneumafil waste, lapping waste, yarn waste, sweep waste, etc., in ring frame department and their effect on yarn quality and production. • Discuss the difference between the poor piecing and good piecing. • Discuss the SOP for inspecting process flow at ring frame and piecing quality. 	<ul style="list-style-type: none"> • Inspect the roving and yarn passage in the ring frame machine and proper seating of cop in spindle after piecing. • Examine pneumafil tube and clean chocking using cleaning stick. • Examine the piecing quality as per standard protocol. • Identify the tools available for piecing quality check.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, piecing board.	

Module 9: Perform cleaning and other tenting activities

Mapped to TSC/N0218, v1.0

Terminal Outcomes:

- Perform other tenting activities at ring frame department.
- Clean different parts of ring frame machine by following standard cleaning method.

Duration: 12:00	Duration: 28:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the other tenting responsibilities of a ring frame operator. • Explain the count change process and important items to be noted during count change. • Differentiate the traveller type based on the traveller count. • Explain the functions of OHTC at ring frame department. • Discuss the reasons for separation of pneumafil waste. • Describe the significance of following 5s housekeeping system in a spinning mill. • Discuss the SOP to carryout tenting and cleaning activities. 	<ul style="list-style-type: none"> • Demonstrate inspection of the working condition of clearer roller, drafting, pneumafil suction tube, OHTC, spindle tape, etc. • Demonstrate traveller change, spacer change, apron change, etc during count change as per specifications. • Carryout troubleshooting of spindle tape cut, apron cut, repeated breaks, OHTC break down, etc. with maintenance fitter. • Demonstrate pneumafil waste collection at machine off end chamber. • Demonstrate clearer roller cleaning, drafting zone cleaning using mechanical/electrical gun. • Demonstrate cleaning of OHTC as per standard method.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, clearer roll, spindle tape, apron, mechanical gun, travellers, spacers, cleaning stick, cleaning brush, clearer cleaning machine, OHTC	

Module 10: Maintaining the work area, tools and machines

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Maintain the work area, tools and machines in spinning department.
- Explain the objective of tools, PPE used in the spinning department.

Duration: 02:00	Duration: 06:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Differentiate various types of tools used for cleaning and maintenance. • Explain the objectives of each maintenance and cleaning tool used in ring frame machine operation. • Discuss the significance of safe handling procedure of tools and equipment. • Brief the importance and written instructions on the allocated machines. • Discuss the significance of minimizing the wastage of material, effort & time. • Prepare a draft schedule for cleaning and waste collection for the assigned job role. • List the available types of material handling equipment and handling methods used in spinning department. • Discuss the types and importance of PPE used in the spinning department. 	<ul style="list-style-type: none"> • Demonstrate the handling procedure of raw materials, tools, PPE and machines. • Identify the appropriate tools and equipment for the respective job. • Demonstrate the scheduled cleaning of machines and equipment. • Check and report the condition of machine guards in the allotted ring frame machine.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, ancillaries, material handling equipment and tool kits of operational, cleaning maintenance activities.	

Module 11: Greening and energy conservation in textile sector

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Identify the recyclable, non-recyclable and hazardous wastes in the spinning department.
- Optimize usage of material and resources at work place.

Duration: 02:00	Duration: 06:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the terms of pollution control, soil conservation, waste management, recycle, forest conservation, global warming, organic products, etc. • List the different sources of energy. • Discuss the impact of using non-biodegradable materials on the environment. • Evaluate the different ways to conserve energy in a textile factory. • Discuss the significance of conserving environment and energy resources. • Discuss the significance of specified usage of resources at work area. 	<ul style="list-style-type: none"> • Demonstrate the segregation of recyclable, non-recyclable, hazardous wastes in the spinning department. • Demonstrate the handling and storage of waste materials. • Create a list of potential ways to reduce wastage and conserve energy in a textile factory.
Classroom Aids:	
Charts, Posters, Projector, Black Board, a batch of 25 people seating capacity with a screen	
Tools, Equipment and Other Requirements	
samples of organic cotton, video visuals on solar power, Package materials - Covers, bags, wrappers, box, etc	

Module 12: Health, safety and emergency response at workplace

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Perform first aid at workplace.
- Follow fire safety protocol in case of fire emergencies in the spinning department.
- Recognise hazardous materials in the spinning department.

Duration: 09:00	Duration: 23:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the significance of safe handling procedure of tools and equipment. • Discuss the importance and standard procedure for materials. • Discuss the impacts hazards of unsafe workplace conditions and procedures in the textile industry (operational, environmental, personal, ergonomic, chemical, electric, fire) and methods to avoid hazards. • Distinguish between the various type of fire extinguishers. • Distinguish different types of alarms and their significance. • Differentiate the different items in a First Aid box. • Discuss the correct work posture and importance of ergonomics for the assigned job role. 	<ul style="list-style-type: none"> • Classify abnormal sounds emanating from faulty/worn out machine parts. • Classify Personal Protective Equipment (PPEs) like body protector, ear plugs, nose mask, head cap, etc. as per guidelines. • Demonstrate handling of fire extinguishers. • Locate emergency exits of workplace and organization. • Participate in fire drills / evacuation at workplace. • Demonstrate application of first aid procedures for injury/accidents in mock situations. • Demonstrate lifting of heavy weight materials as per standard procedure.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
PPE, First aid kit, fire extinguishers, ring frame machine.	

Module 13: Organizational standards and policies

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Recognize the significance of organization policies, quality standards, rules and regulations in textile industries.
- Maintain hygienic working atmosphere as per protocol of the textile sector.

Duration: 06:00	Duration: 11:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the significance of following organizational standard procedures, quality standards, rules, codes, policies and safety Standards for textile sector. • Discuss the need for organizational quality systems, 5S, ISO, SA, etc. following in the textile sector. • Brief the importance of following work wear standards, behavioural protocols and etiquette in textile sector. • Discuss the contents of organisation’s formats and procedures for reporting production, defects, faults, material/tool requisition and quality parameters and task completed for assigned job. 	<ul style="list-style-type: none"> • Practice the systems like Quality circles, 5S, ISO, etc. in the routine work. • Demonstrate the steps to maintain a hygienic workplace.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
list of rules and regulations followed in the organisation, list of industry standards i.e., performance indicators of mills, process, worker, etc.	

Module 14: Teamwork, trust and communication

Mapped to TSC/N9016, v1.0

Terminal Outcomes:

- Conform to standard guidelines while working with the team.
- Communicate effectively with others at workplace.

Duration: 03:00	Duration: 07:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the importance of teamwork and following industry protocols at workplace. • Explain the limits and responsibilities for the assigned duties at textile sector. • Summarize emergency contact numbers, details of officials, reporting protocols and formats. • List hierarchy of communication and communication etiquettes in the textile sector. 	<ul style="list-style-type: none"> • Apply methods of team work to complete/for a given task. • Prepare a sample shift performance report for an allotted task. • Demonstrate the use appropriate verbal and non-verbal communication skills while interacting with others at workplace.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Video visuals of basic communications and team working, models of communicating and team working area at your job.	

Module 15: Adaptability

Mapped to TSC/N9016, v1.0

Terminal Outcomes:

- Operate at various environment and different hierarchy level for the assigned task.
- Create a work plan for the allotted task.

Duration: 02:00	Duration: 03:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the significance of adaptability at work place with various levels of people. • Discuss the importance of developing adaptability skills. • Discuss the impacts of inadaptability at the work place. 	<ul style="list-style-type: none"> • Demonstrate the ability to work in dynamic work environment by developing coping mechanisms, survival tactics and traits of flexibility. • Create a sample backup work plan for the shortage of man power, raw materials, etc.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Video visuals of adaptability with suitable examples	

Module 16: Prepare for manual doffing operation

Mapped to TSC/N0219, v1.0

Terminal Outcomes:

- Schedule the ring frame operation for doffing.
- Collect and arrange empty tubes in doffing crates for doffing.
- Operate Over Head Traveller Cleaner (OHTC).

Duration: 06:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the machine parts doffing zone and their functioning. • Distinguish the handling equipment used for manual doffing in ring frame machine. • Explain the relationship between doffer running time and doffing length with respect to yarn counts. • Distinguish between different colour coded empty tubes. • Discuss the impact of using wrong colour coded and damaged empty tubes for doffing. • Describe the SOP for collecting and arranging empty tubes for doffing. 	<ul style="list-style-type: none"> • Examine Ring frames doffing stage by viewing cop size and schedule doffing operation accordingly. • Demonstrate the process of storing empties at the designated location. • Demonstrate handling doffing trolley and crates. • Demonstrate collecting and arranging empty tubes. • Demonstrate stopping and starting and moving of OHTC forward/backward at ring frame machine.
Classroom Aids:	
Charts, Posters, Projector, Blackboard	
Tools, Equipment and Other Requirements	
Ring frame machine, doffing trolley, crates, empty tubes, OHTC	

Module 17: Perform manual doffing operation

Mapped to TSC/N0219, v1.0

Terminal Outcomes:

- Operate the ring frame machine.
- Demonstrate manual doffing and donning operation.
- Demonstrate piecing of breaks during machine re-start.

Duration: 12:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the significance of non-verbal communications used in doffing activity. • Describe count, cop content, under winding length, cop defects, doff slip, etc. • Discuss the impacts of taking pre-mature and late doffs at ring frame machine. • Discuss the reasons for re-starting breaks. • Explain the functions of different signal lamps in ring frame department. • Discuss the SOP for doffing and gaiting operations at ring frame. 	<ul style="list-style-type: none"> • Demonstrate stopping and re-starting ring frame machine. • Demonstrate removing full cops and inserting empty tubes. • Demonstrate gaiting at ring frame. • Examine all the full cops are replaced firmly with empty tubes. • Develop doff slip and fix to doffed cops. • Demonstrate transporting and stacking of cop crates. • Report doffing details in production record.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, doffing trolley, crates, empty tubes, cops, doff slip, pen, production record	

Module 18: Prepare for automatic doffing operation

Mapped to TSC/N0220, v1.0

Terminal Outcomes:

- Demonstrate collecting and arranging empty tubes in reserve disc at ring frame.
- Carry out inspection on auto doffing components.

Duration: 07:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the machine parts in automatic doffing mechanism and their functioning. • Discuss the responsibilities of ring frame operator while working with automatic doffing ring frame machine. • Discuss the significance of doff running time and doffing length with respect to yarn counts. • Distinguish between different colour coded empty tubes and explain the logic behind the same. • Discuss the impacts of using wrong colour coded and damaged empty tubes for doffing. • Discuss the SOP for collecting and arranging empty tubes at reserve disc and handling doffing trolley. 	<ul style="list-style-type: none"> • Schedule ring frame machine for auto doffing by viewing signal lamps. • Store empties at the designated location. • Demonstrate handling doffing trolley. • Demonstrate collecting and arranging empty tubes at reserve disc. • Schedule inspection of the empty tubes in channel link. • Examine all the grippers are available and in condition at doffing unit. • Demonstrate stopping and starting forward/backward of OHTC at ring frame machine.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine with automatic doffing, doffing (bin) trolley, grippers, empties, OHTC	

Module 19: Perform malfunctions & other responsibilities during automatic doffing at ring frame

Mapped to TSC/N0220, v1.0

Terminal Outcomes:

- Operate the ring frame machines.
- Monitor automatic doffing and donning operation.
- Solve auto doffing malfunctions.

Duration: 10:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the parts of gripper zone and their functioning. • List the significance of non-verbal communications used in doffing activity. • Describe count, cop content, zero under winding length, cop defects, doff slip, etc. • Discuss the impacts of taking pre-mature and late doffs at ring frame machine. • Discuss the reasons for re-starting breaks. • Explain the functions of different signal lamps in ring frame department. • Discuss the SOP for monitoring automatic doffing and gaiting operations at ring frame. 	<ul style="list-style-type: none"> • Demonstrate stopping and re-starting ring frame machine. • Solve gripper malfunctions during automatic operations of removing full cops and fixing empty cops at spindle. • Demonstrate gaiting at ring frame. • Examine all the full cops are replaced with empty tubes. • Develop doff slip and fix to doffed cops. • Demonstrate transporting and stacking of cop crates. • Report doffing details in production record.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment and Other Requirements	
Ring frame machine, doffing (bin) trolley, grippers, empties, cops, doff slip, pen, production record	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Basic Literacy and Numeracy	NA	1	Spinning Production	4	Spinning Production	

Trainer Certification	
Domain Certification	Platform Certification
TSC/Q0205, v1.0 - Ring Frame Operator, Minimum pass percentage 80 per cent	MEP/Q2601, v1.0 – Trainer, Minimum pass percentage 80 per cent

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
ITI	Textiles	3	Spinning Production			

Assessor Certification	
Domain Certification	Platform Certification
TSC/Q0205, v1.0 - Ring Frame Operator, Minimum pass percentage 80 per cent	MEP/Q2701, v1.0 – Assessor, Minimum pass percentage 80 per cent

Assessment Strategy

The overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, reliable and fair and show that these are in line with the requirements of the NSQF.

- a) The emphasis is on 'learn-by-doing' and practical demonstration of skills and knowledge based on the performance criteria.
- b) The assessments papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performances and assessment criteria mentioned in the Qualification Packs.
- c) The assessments papers are also checked for the various outcome-based parameters such as quality, time taken, tools & equipment requirement, etc.
- d) The assessments are designed so as to assess maximum parts during the practical hands on work. Duties and responsibility of Ring Frame Operator also assessed. The technical limitations at the training centres are taken care in theory and viva.
- e) The assessment agencies are instructed to hire qualified and experienced assessors as per TSC's criteria who have integrity, reliability and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise impartiality of the assessments.
- f) The assessment agencies are instructed to ideally have assessors with the right mix of industry experience, academia and these are detailed in Assessment Agency Protocol of TSC
- g) The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to Assessment Framework, competency-based assessments, assessors guide etc. and they are assessed for Domain and assessment skills. Only those assessors who clears both the assessments with minimum 80% marks in each are permitted to carry out assessments.
- h) The assessors are provided with Assessors guide developed by the Subject Matter Expert of the Assessment Agency or by Textile SSC as per Assessment Framework. The Assessors guides are developed to ensure the maximum possible consistency/transparency in the assessment by different assessors and elaborate on the following:
 1. Qualification Pack Structure.
 2. Guidance for the assessors to conduct theory, practical and viva assessments.
 3. Guidance for trainees to be given by assessor before the start of the assessments.
 4. Guidance on assessment process, practical brief with step of operational practical observation checklist Attendance Sheet and mark sheet.
 5. Viva guidance for uniformity and consistency across the batch.
 6. Guidance on assessment evidence collection.

The assessment results are backed by evidence collected by assessors.

1. The assessors need to collect a copy of the attendance sheets for the training done under the scheme. The attendance sheets are signed and stamped by the in charge/ Head of the training centre.
2. The assessors need to verify the authenticity of the candidate by checking the photo ID card issued by the institute as well as any one Photo ID card issued by the Central/Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate and cross verify trainee's credential in the enrolment form.
3. The assessors need to take a camera to click photograph of the trainees working on the job and giving theory exam as evidence.
4. The assessors also need to carry a Photo ID card.
5. The assessors also need to take the photographs as evidence from appropriate angles/sides of the final work piece/job submitted by the trainee.
6. The details on assessment framework are elaborated in Textile SSC protocol for accreditation of Assessment Agencies and Assessment Framework.

All accredited Assessment Agencies follow the "Textile SSC's protocol for accreditation of Assessment Agencies and Assessment Framework". Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performances Criteria in the NOS will be assigned marks for theory or practical based on relative importance, criticality of function and training infrastructure.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training .
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module . A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SOP	Standard Operating Procedure
PPE	Personal Protective Equipment
QC	Quality Control
ISO	International Organization for Standardization
SA	Standards on Auditing