



# Shuttleless Loom Operator

Electives: Airjet loom/ Rapier loom/ Waterjet loom/ Projectile loom

QP Code: TSC/Q2211

Version: 1.0

NSQF Level: 4

Textile Sector Skill Council || Textile Sector Skill Council (TSC)15th Floor, Nirmal Tower,26,  
Barakhamba Road, New Delhi - 110 001  
Office: +91-11-43536355-7

## Contents

TSC/Q2211: Shuttleless Loom Operator .....	3
<i>Brief Job Description</i> .....	3
Applicable National Occupational Standards (NOS) .....	3
<i>Compulsory NOS</i> .....	3
<i>Elective 1: Airjet loom</i> .....	3
<i>Elective 2: Rapier loom</i> .....	3
<i>Elective 3: Waterjet loom</i> .....	3
<i>Elective 4: Projectile loom</i> .....	4
<i>Qualification Pack (QP) Parameters</i> .....	4
TSC/N2222: Taking charge of shift and handing over shift to operator - shuttleless loom .....	5
TSC/N2223: Operate the shuttleless loom .....	11
TSC/N9015: Follow machine, safety, and organizational guidelines in textile sector .....	20
TSC/N9016: Follow teamwork, adaptability, and communication guidelines in textile sector .....	27
TSC/N2224: Execute loom controls and settings - Airjet Loom .....	32
TSC/N2225: Execute loom controls and settings - Rapier Loom .....	36
TSC/N2226: Execute loom controls and settings - Waterjet Loom .....	40
TSC/N2227: Execute loom controls and settings - Projectile Loom .....	44
Assessment Guidelines and Weightage .....	47
<i>Assessment Guidelines</i> .....	47
<i>Assessment Weightage</i> .....	48
Acronyms .....	50
Glossary .....	51

## TSC/Q2211: Shuttleless Loom Operator

### Brief Job Description

Shuttleless loom operator is a job-role in the weaving department of a textile mill for carrying out weaving activity in shuttleless loom efficiently to get maximum output with minimum defects, giving due importance to safety and environmental aspects. The operator should be able to start the loom, mend broken ends and picks activities to produce defect-free fabrics using shuttleless loom.

### Personal Attributes

A Shuttleless loom operator should have physical attributes like dexterity, coordination, motor skills, strength, stamina and handle heavy equipment. The operator should also have sensory attributes like hearing ability and vision (normal distance vision, color vision, night vision, peripheral vision, depth perception and ability to change focus).

### Applicable National Occupational Standards (NOS)

#### Compulsory NOS:

1. [TSC/N2222: Taking charge of shift and handing over shift to operator - shuttleless loom](#)
2. [TSC/N2223: Operate the shuttleless loom](#)
3. [TSC/N9015: Follow machine, safety, and organizational guidelines in textile sector](#)
4. [TSC/N9016: Follow teamwork, adaptability, and communication guidelines in textile sector](#)

#### Electives (mandatory to select at least one):

##### Elective 1: Airjet loom

The Airjet loom operator should be able to execute the loom settings and controls in airjet loom weaving machine.

1. [TSC/N2224: Execute loom controls and settings - Airjet Loom](#)

##### Elective 2: Rapier loom

The Rapier loom operator should be able to execute the loom settings and controls in rapier loom weaving machine.

1. [TSC/N2225: Execute loom controls and settings - Rapier Loom](#)

##### Elective 3: Waterjet loom

The Waterjet loom operator should be able to execute the loom settings and controls in waterjet loom weaving machine.

1. [TSC/N2226: Execute loom controls and settings - Waterjet Loom](#)

#### Elective 4: Projectile loom

The Projectile loom operator should be able to execute the loom settings and controls in projectile loom weaving machine.

1. [TSC/N2227: Execute loom controls and settings - Projectile Loom](#)

### Qualification Pack (QP) Parameters

<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving – Textiles
<b>Occupation</b>	Weaving
<b>Country</b>	India
<b>NSQF Level</b>	4
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/8152.9900
<b>Minimum Educational Qualification &amp; Experience</b>	Basic Literacy and Numeracy with 0-6 Months of experience in shuttleless loom weaving operation
<b>Minimum Level of Education for Training in School</b>	9th Class
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	18 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Approval Date</b>	
<b>Version</b>	1.0

## TSC/N2222: Taking charge of shift and handing over shift to operator - shuttleless loom

### Description

This unit is about taking charge of shift from previous shift shuttleless loom operator and relieving the responsibilities to the next shift shuttle loom operator.

### Scope

The scope covers the following :

- Taking charge of shift from previous loom operator
- Handing over the shift to next shift loom operator

### Elements and Performance Criteria

#### *Taking charge of shift from previous loom operator*

To be competent, the user/individual on the job must be able to:

- PC1.** report for duty at least 15-20 minutes earlier than scheduled time to take stock of necessary operational tools, lot and quality changes
- PC2.** take a quick round of the allotted shuttleless looms with previous shift operator and discuss the issues faced related to quality, production, spares, fabric defects, safety or any other specific instructions, etc.
- PC3.** get complete information on type and specifications of fabric being and to be produced for allocated shuttleless looms
- PC4.** verify the technical details mentioned in the shuttleless loom card or display board of the loom and verify with the counterpart that the same are running on the allotted looms
- PC5.** ensure for the availability and the condition of weft cones and as per the quality and quantity mentioned in the loom card
- PC6.** inspect running beams for cross ends, ends pulling out, defective selvages, etc.
- PC7.** check the status of running beams and verify the availability of warp beams against exhausting beams
- PC8.** examine the size of the cloth rollers and plan their doffing schedule
- PC9.** verify the functioning of the allotted shuttleless looms, their parts and the loom mechanisms
- PC10.** ensure that the waste collection boxes are empty and labeled
- PC11.** check the cleanliness of the machines and other work areas and observe if any spare part, raw material or tool, etc. are lying near looms and report anomalies to both shift superiors
- PC12.** assist the supervisor to prepare the shift handover report as per the standard protocol
- PC13.** assist the supervisor to calculate shuttleless loom production, efficiency percentage, etc.

#### *Handing over the shift to next shift loom operator*

To be competent, the user/individual on the job must be able to:

- PC14.** hand over the shift to- and get clearance from, the incoming shift operator as per standard procedure

- PC15.** provide all relevant information and data on allotted looms related to fabric production and planning, fabric defects, loom breakdowns, spare parts replacement and amount of waste generation, etc.
- PC16.** report to both incoming and outgoing shift superiors if the counterpart doesn't report for duties
- PC17.** inform both shift superiors and get their suggestions for any miscommunication or misunderstanding on production instructions
- PC18.** submit the data to the shift superior about the quality, production, safety issues and any other issues faced in the shift
- PC19.** get concurrence from the supervisor before leaving the shuttleless loom production department
- PC20.** collect the waste from waste collection bags, weigh them and dispose-off at the specified place
- PC21.** ensure that the work spot is clean as per the standard checklist

### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- KU1.** details of various job roles, responsibilities and hierarchy in the shuttleless loom weaving department
- KU2.** protocol and standard procedures and formats to obtain information on work related tasks in the shuttleless loom weaving department
- KU3.** fabric quality particulars such as EPI, PPI, width, weave, GSM, etc.
- KU4.** reporting formats to superiors and log book formats
- KU5.** standard operating procedures and regulations in a textile weaving mill
- KU6.** color coding adopted for different products in the weaving mill and its importance
- KU7.** understanding the importance of types of fibers, yarns and fabrics and defects, yarn count, types of weaving machines auto loom, projectile, rapier, airjet, waterjet
- KU8.** process flow and material flow in a textile weaving mill
- KU9.** knowledge of waste collection system and equipment used
- KU10.** guidelines and protocol for taking and handing over charge of shift in the shuttleless loom
- KU11.** procedure for patrolling around the shuttle-less looms in the weaving departments
- KU12.** importance of reaching before shift time
- KU13.** relation between maintaining cleanliness of looms and work space to increase loom efficiency and fabric quality
- KU14.** protocol and format for reporting work related risks
- KU15.** warp beam defects such as cross ends, missing ends, defective selvages, etc.
- KU16.** schedule for cleaning, fabric roll doffing, etc.
- KU17.** colour coding followed for segregation of various wastes such as hard waste, soft waste, recyclable, non-recyclable waste, etc.

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** write clear and short sentences in local/English language
- GS2.** comprehend written production data, work method posters, safety, routine maintenance instruction, etc.
- GS3.** comprehend written production data, work method posters, safety, routine maintenance instruction, etc.
- GS4.** perform basic arithmetic calculations
- GS5.** communicate effectively with shift superiors in case of any discrepancy related to final product or raw material or during the process

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Taking charge of shift from previous loom operator</i>	<b>12</b>	<b>27</b>	-	-
<b>PC1.</b> report for duty at least 15-20 minutes earlier than scheduled time to take stock of necessary operational tools, lot and quality changes	-	-	-	-
<b>PC2.</b> take a quick round of the allotted shuttleless looms with previous shift operator and discuss the issues faced related to quality, production, spares, fabric defects, safety or any other specific instructions, etc.	-	-	-	-
<b>PC3.</b> get complete information on type and specifications of fabric being and to be produced for allocated shuttleless looms	-	-	-	-
<b>PC4.</b> verify the technical details mentioned in the shuttleless loom card or display board of the loom and verify with the counterpart that the same are running on the allotted looms	-	-	-	-
<b>PC5.</b> ensure for the availability and the condition of weft cones and as per the quality and quantity mentioned in the loom card	-	-	-	-
<b>PC6.</b> inspect running beams for cross ends, ends pulling out, defective selvages, etc.	-	-	-	-
<b>PC7.</b> check the status of running beams and verify the availability of warp beams against exhausting beams	-	-	-	-
<b>PC8.</b> examine the size of the cloth rollers and plan their doffing schedule	-	-	-	-
<b>PC9.</b> verify the functioning of the allotted shuttleless looms, their parts and the loom mechanisms	-	-	-	-
<b>PC10.</b> ensure that the waste collection boxes are empty and labeled	-	-	-	-
<b>PC11.</b> check the cleanliness of the machines and other work areas and observe if any spare part, raw material or tool, etc. are lying near looms and report anomalies to both shift superiors	-	-	-	-



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> assist the supervisor to prepare the shift handover report as per the standard protocol	-	-	-	-
<b>PC13.</b> assist the supervisor to calculate shuttleless loom production, efficiency percentage, etc.	-	-	-	-
<i>Handing over the shift to next shift loom operator</i>	<b>12</b>	<b>27</b>	-	-
<b>PC14.</b> hand over the shift to- and get clearance from, the incoming shift operator as per standard procedure	-	-	-	-
<b>PC15.</b> provide all relevant information and data on allotted looms related to fabric production and planning, fabric defects, loom breakdowns, spare parts replacement and amount of waste generation, etc.	-	-	-	-
<b>PC16.</b> report to both incoming and outgoing shift superiors if the counterpart doesn't report for duties	-	-	-	-
<b>PC17.</b> inform both shift superiors and get their suggestions for any miscommunication or misunderstanding on production instructions	-	-	-	-
<b>PC18.</b> submit the data to the shift superior about the quality, production, safety issues and any other issues faced in the shift	-	-	-	-
<b>PC19.</b> get concurrence from the supervisor before leaving the shuttleless loom production department	-	-	-	-
<b>PC20.</b> collect the waste from waste collection bags, weigh them and dispose-off at the specified place	-	-	-	-
<b>PC21.</b> ensure that the work spot is clean as per the standard checklist	-	-	-	-
<b>NOS Total</b>	<b>24</b>	<b>54</b>	-	-

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	TSC/N2222
<b>NOS Name</b>	Taking charge of shift and handing over shift to operator - shuttleless loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving - Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N2223: Operate the shuttleless loom

### Description

This unit is about carrying out loom operation, mending of warp and weft breaks, and other work responsibilities in shuttleless loom department.

### Scope

The scope covers the following :

- Operate the shuttleless loom
- Repair the yarn breaks
- Contribute to quality and productivity in shuttleless loom weaving
- Adjust and monitor the operations of the shuttleless loom

### Elements and Performance Criteria

#### *Operate the shuttleless loom*

To be competent, the user/individual on the job must be able to:

- PC1.** start and stop the shuttleless loom including inching and fast running
- PC2.** check the machine display at specified intervals for technical data, production data and other information and observe the discrepancies, if any
- PC3.** perform cleaning of the looms and work area as per daily schedule
- PC4.** monitor the functioning of primary, secondary and tertiary motions of the shuttleless loom
- PC5.** verify that all the stop motions, indication lamps, preventive mechanisms, controls, etc. are functioning as per the requirements
- PC6.** verify that all shuttleless loom safety covers are in place
- PC7.** identify the reasons for loom stoppages according to indicator lights
- PC8.** stop the shuttleless loom using emergency stop button
- PC9.** assist the knotters during sort change on the allotted looms as per the standards
- PC10.** check the knotted loom for knotting quality and remove double ends as per the limits of responsibility
- PC11.** assist the supervisor to maintain knotting entry with the warp style details such as count, ends, length, etc.
- PC12.** check for the availability of the weft cones and check the condition of the same

#### *Repair the yarn breaks*

To be competent, the user/individual on the job must be able to:

- PC13.** ensure correct quality of thrums are available for attending warp breakages
- PC14.** maintain prescribed size of the catch cord and the selvedge
- PC15.** maintain catch cord ends as per the standard requirements
- PC16.** draw selvedge ends as per the type of selvedge such as plain selvedge, tape selvedge, leno selvedge, etc.
- PC17.** tie weaver's knot as per standard method

- PC18.** adjust 'take-up' and 'let-off' functions of shuttleless loom to maintain required tension in the warp sheet as per the weave requirement
- PC19.** identify the warp end breakages using prescribed technique
- PC20.** repair the warp breaks within defined time limit for single and multiple breaks at the warp sheet
- PC21.** identify reason for the frequent breakages and get assistance, if required, from fitters or supervisor
- PC22.** locate and repair weft breaks as per the standard method using required tools such as weft wire
- PC23.** locate the last pick inserted at the fell of the cloth by ensuring proper pick finding
- PC24.** tie the tail end of running weft yarn package with the outer end of reserve package as per the guidelines
- PC25.** ensure judicious usage of weft yarn, without giving room for wastage in the shuttleless loom department

*Contribute to quality and productivity in shuttleless loom weaving*

To be competent, the user/individual on the job must be able to:

- PC26.** unweave the float and restart the loom without starting mark and weft crack
- PC27.** attend to loom stoppages as per the priority with minimum downtime and maximum production
- PC28.** rectify running fabric defects like wrong drawing and denting, missing end, double end, weft breaks, etc. in the allotted looms
- PC29.** doff the cloth rolls as per style specifications
- PC30.** collect and dispose the yarn waste as per the specified instruction
- PC31.** monitor the condition of heald, heald wires, temples, reed and other machine parts at specified intervals
- PC32.** report to superiors for any deviation in the loom settings, performance, beam knotting or gaiting quality, fabric or raw material quality, etc.
- PC33.** carry out preventive maintenance as per defined schedule within the responsibility limits such as shedding frame alignment, oiling and greasing, etc.
- PC34.** assist the supervisor to maintain records of production, spare parts, raw material, etc.

*Adjust and monitor the operations of the shuttleless loom*

To be competent, the user/individual on the job must be able to:

- PC35.** inspect the oil level from the oil level indicators of the centralized lubrication point, shedding devices, etc.
- PC36.** adjust the filling yarn setting as per the limits of responsibility such as pressure, speed, etc.
- PC37.** adjust the back rest and dropper bar positions as per the warp and style specification
- PC38.** set the shed angle for various shed frames according to the fitter instruction using specified gauge
- PC39.** prepare the loom for running after style change and warp change activities
- PC40.** set the various parameters in the control panel of the loom as per the supervisor instruction such as loom rpm, take up, warp wind and unwind, etc.
- PC41.** inspect and clear the fluff accumulations in the pre-winders as per the standard method
- PC42.** adjust the weft selectors as per the weft design requirements
- PC43.** set the filling cutter as per the fabric width requirement

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** types of weaving machines such as powerlooms, autoloom, projectile, rapier, airjet, waterjet, etc.
- KU2.** primary, secondary and tertiary motions and their mechanism and loom timings in a shuttleless loom
- KU3.** location and function of various stop motions and safety mechanism in a shuttleless loom
- KU4.** potential hazards associated with operation of shuttleless looms and crucial safety precautions to be followed while operating loom
- KU5.** significance of starting the loom with inching, fast running and without inching or in one stroke
- KU6.** available controls buttons to operate shuttleless looms such as airjet, projectile, rapier, waterjet
- KU7.** woven fabric defects and causes
- KU8.** remedies and reason of common weaving defects in shuttleless looms
- KU9.** woven fabric inspection methods and grading systems such as 4-point and 10-point
- KU10.** importance of quality woven fabric production
- KU11.** fabric quality particulars such as ends & picks per inch, width, weave, yarn count, EPI, PPI, GSM, etc.
- KU12.** fabric defects due to warp, weft, machine, weaving parameters, etc.
- KU13.** different signal lights on the shuttleless loom and their significance
- KU14.** various sounds, signals and alarms in the weaving shed and their significance
- KU15.** weavability of various yarns from natural fibers, manmade fibers and blended fibers on shuttleless looms
- KU16.** protocol for reporting to the supervisor or higher authority in case of emergency
- KU17.** types of weaves such as plain, twill, satin, jacquard designs, etc. and their appearance on fabric surface
- KU18.** prescribed time limits for attending various types of faults and stoppages in shuttleless looms
- KU19.** classification of mendable and non-mendable defects
- KU20.** classification of fabrics defects into weaver oriented, machine oriented, raw material defects
- KU21.** contact person in case of queries on procedure or products and for resolving issues related to defective machines, tools, materials and equipment
- KU22.** guidelines for storage and disposal of waste materials
- KU23.** types of sheds such as open shed, semi-open shed, center closed shed, bottom close shed
- KU24.** details of shed particulars such as shed angle, shed depth, shed height
- KU25.** types of pre-winders and its routine check points
- KU26.** yarn range production possibility in the allotted shuttleless loom such as count range in case of spun yarns and denier range in case of filament yarns
- KU27.** types and applications of technical textile fabrics that can be produced in shuttleless looms such as agro textiles, air bag, tent fabrics, conveyor belts, geo grids, heavy canvas, filter fabric, tire cord, etc.

- KU28.** details of minimum and maximum loom rpm for the different fibres and weave structure
- KU29.** details of Quick Style Change (QSC) and Quick Warp Change (QWC)
- KU30.** maximum permissible cloth roll diameter (in millimeter) for the allotted shuttle loom
- KU31.** various types of reeds in various shuttleless looms such as airjet, projectile, rapier, waterjet
- KU32.** types of available selvages such as plain selvages, tape selvages, split selvages, fused selvages, leno selvages, tuck-in selvages, etc.
- KU33.** allotted loom dimensions and location of the main drive
- KU34.** details of lubrication and greasing points in the allotted shuttleless loom
- KU35.** filling setting for various shuttleless looms
- KU36.** filling speed in meters per minute (mpm) in the allotted loom
- KU37.** operating width range in the allotted loom such as minimum and maximum possible woven fabric production possibility in the allotted loom
- KU38.** types of shedding mechanisms such as mechanical dobby, electronic dobby, cam dobby, jacquard, etc.
- KU39.** drives and motors involved in Electronic Let-off (ELO) and Electronic Take-off (ETO) motions
- KU40.** details of droppers such as weight, number, dimensions, types, etc.

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** write neat and clear in shuttleless loom's production log book
- GS2.** listen to your colleagues and superiors properly
- GS3.** plan as per directions from superiors

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Operate the shuttleless loom</i>	<b>27</b>	<b>63</b>	-	-
<b>PC1.</b> start and stop the shuttleless loom including inching and fast running	-	-	-	-
<b>PC2.</b> check the machine display at specified intervals for technical data, production data and other information and observe the discrepancies, if any	-	-	-	-
<b>PC3.</b> perform cleaning of the looms and work area as per daily schedule	-	-	-	-
<b>PC4.</b> monitor the functioning of primary, secondary and tertiary motions of the shuttleless loom	-	-	-	-
<b>PC5.</b> verify that all the stop motions, indication lamps, preventive mechanisms, controls, etc. are functioning as per the requirements	-	-	-	-
<b>PC6.</b> verify that all shuttleless loom safety covers are in place	-	-	-	-
<b>PC7.</b> identify the reasons for loom stoppages according to indicator lights	-	-	-	-
<b>PC8.</b> stop the shuttleless loom using emergency stop button	-	-	-	-
<b>PC9.</b> assist the knotters during sort change on the allotted looms as per the standards	-	-	-	-
<b>PC10.</b> check the knotted loom for knotting quality and remove double ends as per the limits of responsibility	-	-	-	-
<b>PC11.</b> assist the supervisor to maintain knotting entry with the warp style details such as count, ends, length, etc.	-	-	-	-
<b>PC12.</b> check for the availability of the weft cones and check the condition of the same	-	-	-	-
<i>Repair the yarn breaks</i>	<b>27</b>	<b>63</b>	-	-
<b>PC13.</b> ensure correct quality of thrums are available for attending warp breakages	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> maintain prescribed size of the catch cord and the selvedge	-	-	-	-
<b>PC15.</b> maintain catch cord ends as per the standard requirements	-	-	-	-
<b>PC16.</b> draw selvedge ends as per the type of selvedge such as plain selvedge, tape selvedge, leno selvedge, etc.	-	-	-	-
<b>PC17.</b> tie weaver's knot as per standard method	-	-	-	-
<b>PC18.</b> adjust 'take-up' and 'let-off' functions of shuttleless loom to maintain required tension in the warp sheet as per the weave requirement	-	-	-	-
<b>PC19.</b> identify the warp end breakages using prescribed technique	-	-	-	-
<b>PC20.</b> repair the warp breaks within defined time limit for single and multiple breaks at the warp sheet	-	-	-	-
<b>PC21.</b> identify reason for the frequent breakages and get assistance, if required, from fitters or supervisor	-	-	-	-
<b>PC22.</b> locate and repair weft breaks as per the standard method using required tools such as weft wire	-	-	-	-
<b>PC23.</b> locate the last pick inserted at the fell of the cloth by ensuring proper pick finding	-	-	-	-
<b>PC24.</b> tie the tail end of running weft yarn package with the outer end of reserve package as per the guidelines	-	-	-	-
<b>PC25.</b> ensure judicious usage of weft yarn, without giving room for wastage in the shuttleless loom department	-	-	-	-
<i>Contribute to quality and productivity in shuttleless loom weaving</i>	<b>27</b>	<b>63</b>	-	-
<b>PC26.</b> unweave the float and restart the loom without starting mark and weft crack	-	-	-	-



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC27.</b> attend to loom stoppages as per the priority with minimum downtime and maximum production	-	-	-	-
<b>PC28.</b> rectify running fabric defects like wrong drawing and denting, missing end, double end, weft breaks, etc. in the allotted looms	-	-	-	-
<b>PC29.</b> doff the cloth rolls as per style specifications	-	-	-	-
<b>PC30.</b> collect and dispose the yarn waste as per the specified instruction	-	-	-	-
<b>PC31.</b> monitor the condition of heald, heald wires, temples, reed and other machine parts at specified intervals	-	-	-	-
<b>PC32.</b> report to superiors for any deviation in the loom settings, performance, beam knotting or gaiting quality, fabric or raw material quality, etc.	-	-	-	-
<b>PC33.</b> carry out preventive maintenance as per defined schedule within the responsibility limits such as shedding frame alignment, oiling and greasing, etc.	-	-	-	-
<b>PC34.</b> assist the supervisor to maintain records of production, spare parts, raw material, etc.	-	-	-	-
<i>Adjust and monitor the operations of the shuttleless loom</i>	<b>27</b>	<b>63</b>	-	-
<b>PC35.</b> inspect the oil level from the oil level indicators of the centralized lubrication point, shedding devices, etc.	-	-	-	-
<b>PC36.</b> adjust the filling yarn setting as per the limits of responsibility such as pressure, speed, etc.	-	-	-	-
<b>PC37.</b> adjust the back rest and dropper bar positions as per the warp and style specification	-	-	-	-
<b>PC38.</b> set the shed angle for various shed frames according to the fitter instruction using specified gauge	-	-	-	-
<b>PC39.</b> prepare the loom for running after style change and warp change activities	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC40.</b> set the various parameters in the control panel of the loom as per the supervisor instruction such as loom rpm, take up, warp wind and unwind, etc.	-	-	-	-
<b>PC41.</b> inspect and clear the fluff accumulations in the pre-winders as per the standard method	-	-	-	-
<b>PC42.</b> adjust the weft selectors as per the weft design requirements	-	-	-	-
<b>PC43.</b> set the filling cutter as per the fabric width requirement	-	-	-	-
<b>NOS Total</b>	<b>108</b>	<b>252</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	TSC/N2223
<b>NOS Name</b>	Operate the shuttleless loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving – Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N9015: Follow machine, safety, and organizational guidelines in textile sector

### Description

This unit provides performance criteria, knowledge and skills required to follow machine, safety and organizational guidelines in textile sector.

### Scope

The scope covers the following :

- Maintaining the work area, tools and machines
- Greening and energy conservation in textile sector
- Health, safety and response to emergencies at textile sector
- Organizational standards and policies

### Elements and Performance Criteria

#### *Maintaining the work area, tools and machines*

To be competent, the user/individual on the job must be able to:

- PC1.** handle materials, machinery, equipment and tools as per standard procedure
- PC2.** use appropriate material handling equipment and tools as per standard procedure
- PC3.** keep the equipment, machine and work area clean using appropriate cleaning tools as per standard procedure
- PC4.** undertake minor routine maintenance of equipment and tools as per standard maintenance procedure
- PC5.** maintain record for defective and unsafe equipment and tools
- PC6.** verify that machine guards are in place as per standard specifications
- PC7.** follow specified ergonomics for the assigned job role in textile sector
- PC8.** collect and store worn-out spare parts at specified location
- PC9.** report the condition of worn out parts as per standard procedure

#### *Greening and energy conservation in textile sector*

To be competent, the user/individual on the job must be able to:

- PC10.** segregate wastes such as recyclable, non-recyclable, hazardous as per standard protocol
- PC11.** optimize usage of material and resources including water, electricity in various tasks
- PC12.** switch off the machines and lights when not in use

#### *Health, safety and response to emergencies at textile sector*

To be competent, the user/individual on the job must be able to:

- PC13.** use Personal Protective Equipment (PPEs) like body protector, ear plugs, nose mask, head cap, etc. as per guidelines
- PC14.** identify abnormal sounds emanating from faulty or worn out machine parts and take appropriate action
- PC15.** avoid dependency on any type of intoxicants
- PC16.** maintain social distance as per the instruction at workplace

- PC17.** report hazardous material to superiors at workplace
- PC18.** use the various appropriate fire extinguishers on different types of fires correctly
- PC19.** follow the specified steps in case of electricity failure
- PC20.** lift heavy objects using correct lifting procedures
- PC21.** recall emergency exits, safe spots, etc. of workplace
- PC22.** practice mock drills and evacuation procedures organized by industry
- PC23.** assist others to reach to safe spots in emergency situations
- PC24.** provide basic first aid for injury to peers and report to superiors
- PC25.** interpret different signs, alarms and take action appropriately
- PC26.** follow the guidelines while working in hazards atmosphere
- PC27.** assist in designing the safety plans with peers and superiors
- PC28.** follow the approved safety plans at workplace

#### *Organizational standards and policies*

To be competent, the user/individual on the job must be able to:

- PC29.** perform assigned duties as per organization's protocol within scheduled time period
- PC30.** follow organization policies, quality standards, rules and regulations for working in textile sector
- PC31.** motivate colleagues to follow operational guidelines of organization
- PC32.** wear specified uniform and follow etiquette as per standard guidelines for the textile sector
- PC33.** maintain hygienic working atmosphere as per protocol of the textile sector
- PC34.** submit lost and found articles as per standard protocol

### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- KU1.** organizational standard procedures, quality standards, rules, codes, policies and safety standards in the textile sector
- KU2.** different type of tools and equipment used in textile sub- sector and their specifications and operating procedures
- KU3.** safe handling procedure of tools and equipment
- KU4.** the importance of displays and written instructions for the allocated machines
- KU5.** dos and donts specific to the assigned work responsibilities
- KU6.** protocol for minimizing the wastage of material, effort and time
- KU7.** organization's formats and procedures for reporting production, defects, faults, material/tool requisition and quality parameters and task completed for assigned job
- KU8.** schedule for cleaning and waste collection for the assigned job role
- KU9.** importance and standard procedure for disposal of soft, hard, non-hazardous and hazardous wastes and materials
- KU10.** available types of material handling equipment and handling methods used in the textile sector
- KU11.** hazards of unsafe workplace conditions and procedures in the textile industry and methods to avoid hazards

- KU12.** various types of fire extinguishers
- KU13.** importance of stable mental condition in case of emergency
- KU14.** correct work posture and importance of ergonomics for the assigned job role
- KU15.** organizational quality systems like quality circle, 5S, ISO, SA, etc. followed in the textile sector
- KU16.** importance of following work wear standards, behavioral protocols and etiquette in the textile sector
- KU17.** importance of energy conservation through proper maintenance schedule in the textile sector
- KU18.** procedures and formats for reporting lost and found material
- KU19.** different types of alarms and their significance

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** read and comprehend policies in notice boards displayed in the workplace
- GS2.** minimize the resource consumption for the assigned task
- GS3.** solve basic arithmetic calculations related to assigned job role
- GS4.** recognize and differentiate colors of materials used in textile sector
- GS5.** lift specified materials for the allotted task using prescribed ergonomic position
- GS6.** exhibit motor skill required for the allotted task

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintaining the work area, tools and machines</i>	<b>10</b>	<b>10</b>	-	<b>6</b>
<b>PC1.</b> handle materials, machinery, equipment and tools as per standard procedure	-	-	-	-
<b>PC2.</b> use appropriate material handling equipment and tools as per standard procedure	-	-	-	-
<b>PC3.</b> keep the equipment, machine and work area clean using appropriate cleaning tools as per standard procedure	-	-	-	-
<b>PC4.</b> undertake minor routine maintenance of equipment and tools as per standard maintenance procedure	-	-	-	-
<b>PC5.</b> maintain record for defective and unsafe equipment and tools	-	-	-	-
<b>PC6.</b> verify that machine guards are in place as per standard specifications	-	-	-	-
<b>PC7.</b> follow specified ergonomics for the assigned job role in textile sector	-	-	-	-
<b>PC8.</b> collect and store worn-out spare parts at specified location	-	-	-	-
<b>PC9.</b> report the condition of worn out parts as per standard procedure	-	-	-	-
<i>Greening and energy conservation in textile sector</i>	<b>7</b>	<b>10</b>	-	<b>6</b>
<b>PC10.</b> segregate wastes such as recyclable, non-recyclable, hazardous as per standard protocol	-	-	-	-
<b>PC11.</b> optimize usage of material and resources including water, electricity in various tasks	-	-	-	-
<b>PC12.</b> switch off the machines and lights when not in use	-	-	-	-
<i>Health, safety and response to emergencies at textile sector</i>	<b>32</b>	<b>40</b>	-	<b>28</b>

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> use Personal Protective Equipment (PPEs) like body protector, ear plugs, nose mask, head cap, etc. as per guidelines	-	-	-	-
<b>PC14.</b> identify abnormal sounds emanating from faulty or worn out machine parts and take appropriate action	-	-	-	-
<b>PC15.</b> avoid dependency on any type of intoxicants	-	-	-	-
<b>PC16.</b> maintain social distance as per the instruction at workplace	-	-	-	-
<b>PC17.</b> report hazardous material to superiors at workplace	-	-	-	-
<b>PC18.</b> use the various appropriate fire extinguishers on different types of fires correctly	-	-	-	-
<b>PC19.</b> follow the specified steps in case of electricity failure	-	-	-	-
<b>PC20.</b> lift heavy objects using correct lifting procedures	-	-	-	-
<b>PC21.</b> recall emergency exits, safe spots, etc. of workplace	-	-	-	-
<b>PC22.</b> practice mock drills and evacuation procedures organized by industry	-	-	-	-
<b>PC23.</b> assist others to reach to safe spots in emergency situations	-	-	-	-
<b>PC24.</b> provide basic first aid for injury to peers and report to superiors	-	-	-	-
<b>PC25.</b> interpret different signs, alarms and take action appropriately	-	-	-	-
<b>PC26.</b> follow the guidelines while working in hazards atmosphere	-	-	-	-
<b>PC27.</b> assist in designing the safety plans with peers and superiors	-	-	-	-
<b>PC28.</b> follow the approved safety plans at workplace	-	-	-	-



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Organizational standards and policies</i>	<b>16</b>	<b>20</b>	-	<b>10</b>
<b>PC29.</b> perform assigned duties as per organization's protocol within scheduled time period	-	-	-	-
<b>PC30.</b> follow organization policies, quality standards, rules and regulations for working in textile sector	-	-	-	-
<b>PC31.</b> motivate colleagues to follow operational guidelines of organization	-	-	-	-
<b>PC32.</b> wear specified uniform and follow etiquette as per standard guidelines for the textile sector	-	-	-	-
<b>PC33.</b> maintain hygienic working atmosphere as per protocol of the textile sector	-	-	-	-
<b>PC34.</b> submit lost and found articles as per standard protocol	-	-	-	-
<b>NOS Total</b>	<b>65</b>	<b>80</b>	-	<b>50</b>

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	TSC/N9015
<b>NOS Name</b>	Follow machine, safety, and organizational guidelines in textile sector
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Generic - Textiles Handloom
<b>Occupation</b>	Generic - Textiles & Handloom
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N9016: Follow teamwork, adaptability, and communication guidelines in textile sector

### Description

This unit provides performance criteria, knowledge and skills required to follow team work, communication and adaptability in textile sector

### Scope

The scope covers the following :

- Teamwork and communication
- Adaptability

### Elements and Performance Criteria

#### *Teamwork, trust and communication*

To be competent, the user/individual on the job must be able to:

- PC1.** contribute to create a positive work environment in the team
- PC2.** carry out tasks as per instructions received from superiors
- PC3.** contribute to team work as per allocated responsibility to complete the task by using appropriate tools and methods
- PC4.** build trust with team mates and superiors
- PC5.** implement the ideas after superior's approval at work place
- PC6.** communicate clearly with the team members as per standard protocol
- PC7.** use suggested hand signs, vocal sound signals to convey the information in the production area
- PC8.** listen effectively to the ideas and concerns of the peers
- PC9.** use correct and respectful terms while communicating as per industry policy
- PC10.** express views proactively and effectively
- PC11.** make efforts to resolve difference of opinion with superiors and team members
- PC12.** report to superior for problems identified in assigned duty
- PC13.** report the daily performance to superior in prescribed manner and formats

#### *Adaptability*

To be competent, the user/individual on the job must be able to:

- PC14.** adapt to flexible work environment for the assigned task
- PC15.** adapt to work with various members of different ethnicity, gender and PwD without biases
- PC16.** consider opinions of colleagues, fitters, superiors for the assigned task
- PC17.** plan the work-routine within the limits of the responsibility
- PC18.** adopt new ideas after due approval from superior for improving the productivity

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** importance of teamwork and discipline
- KU2.** limits and responsibilities for the assigned duties in the textile sector
- KU3.** possible conflicts in the assigned job role and methods to resolve the same
- KU4.** importance of teamwork, group discussions and healthy work environment
- KU5.** importance of reporting as per the standard protocol
- KU6.** hierarchy of communication and communication etiquettes in the textile sector
- KU7.** protocol for communication with different ethnicity, gender and PwD
- KU8.** report and grievance submission formats
- KU9.** importance of hand, vocal sound signals in the textile sector

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** read and comprehend written instructions
- GS2.** listen effectively for the instructions
- GS3.** coordinate with team mates for the allotted tasks
- GS4.** use and comprehend prescribed voice and hand signals in the textile production area
- GS5.** fill forms and prepare reports such as production report, material requisition forms, leave application, etc. as per standard formats

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Teamwork, trust and communication</i>	<b>10</b>	<b>15</b>	-	<b>5</b>
<b>PC1.</b> contribute to create a positive work environment in the team	-	-	-	-
<b>PC2.</b> carry out tasks as per instructions received from superiors	-	-	-	-
<b>PC3.</b> contribute to team work as per allocated responsibility to complete the task by using appropriate tools and methods	-	-	-	-
<b>PC4.</b> build trust with team mates and superiors	-	-	-	-
<b>PC5.</b> implement the ideas after superior's approval at work place	-	-	-	-
<b>PC6.</b> communicate clearly with the team members as per standard protocol	-	-	-	-
<b>PC7.</b> use suggested hand signs, vocal sound signals to convey the information in the production area	-	-	-	-
<b>PC8.</b> listen effectively to the ideas and concerns of the peers	-	-	-	-
<b>PC9.</b> use correct and respectful terms while communicating as per industry policy	-	-	-	-
<b>PC10.</b> express views proactively and effectively	-	-	-	-
<b>PC11.</b> make efforts to resolve difference of opinion with superiors and team members	-	-	-	-
<b>PC12.</b> report to superior for problems identified in assigned duty	-	-	-	-
<b>PC13.</b> report the daily performance to superior in prescribed manner and formats	-	-	-	-
<i>Adaptability</i>	<b>5</b>	<b>5</b>	-	<b>5</b>
<b>PC14.</b> adapt to flexible work environment for the assigned task	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC15.</b> adapt to work with various members of different ethnicity, gender and PwD without biases	-	-	-	-
<b>PC16.</b> consider opinions of colleagues, fitters, superiors for the assigned task	-	-	-	-
<b>PC17.</b> plan the work-routine within the limits of the responsibility	-	-	-	-
<b>PC18.</b> adopt new ideas after due approval from superior for improving the productivity	-	-	-	-
<b>NOS Total</b>	<b>15</b>	<b>20</b>	-	<b>10</b>

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	TSC/N9016
<b>NOS Name</b>	Follow teamwork, adaptability, and communication guidelines in textile sector
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Generic - Textiles Handloom
<b>Occupation</b>	Generic - Textiles & Handloom
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N2224: Execute loom controls and settings - Airjet Loom

### Description

This OS unit is about performance criteria, knowledge and understanding and generic skills required for managing the loom controls and settings in airjet looms.

### Scope

The scope covers the following :

- Monitor and set loom controls in airjet loom

### Elements and Performance Criteria

#### *Monitor and set loom controls in airjet loom*

To be competent, the user/individual on the job must be able to:

- PC1.** monitor the functioning of airjet loom machine parts
- PC2.** set the pressure settings according to weft count in airjet loom's main nozzle and the relay nozzles in its control panel
- PC3.** test the main nozzle and the relay nozzles and their settings using the control panel of the loom
- PC4.** fix the relay nozzles as per the width of the fabric in the nozzle rail using specified tools
- PC5.** monitor the operation of leno selvedge mechanism
- PC6.** actuate the emergency button in the airjet looms as per the instruction
- PC7.** set the weft selector function as per the weft design requirements in the airjet loom control panel

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** parts of airjet loom and its functions
- KU2.** weft insertion mechanism in airjet loom weaving
- KU3.** airjet loom timing diagram
- KU4.** optimum air pressure range for main and relay nozzles and process to set the same
- KU5.** profile reed and its importance
- KU6.** functions of air guide channels and weft detectors
- KU7.** significance of relay nozzles and their settings
- KU8.** advantages of airjet loom over other shuttleless looms
- KU9.** potential hazards specifically associated with airjet loom and important safety precautions to be taken
- KU10.** safety mechanisms and their operation on airjet loom
- KU11.** requirement and importance of proper air pressure, for efficient working of airjet loom and methodology to check and maintain it as per specified requirement



**KU12.** location and function of leno selvedge mechanism

**KU13.** weft filling speed in meter per minute in the airjet loom

**KU14.** operating speed and width of the allotted airjet loom

### **Generic Skills (GS)**

User/individual on the job needs to know how to:

**GS1.** write clear and short sentences

**GS2.** read and comprehend written production instructions

**GS3.** perform basic arithmetic calculations to find the production, production efficiency, etc.

**GS4.** communicate with colleagues and superiors as per standard protocol

**GS5.** plan the tasks based on instructions from superiors

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Monitor and set loom controls in airjet loom</i>	<b>66</b>	<b>156</b>	-	-
<b>PC1.</b> monitor the functioning of airjet loom machine parts	-	-	-	-
<b>PC2.</b> set the pressure settings according to weft count in airjet loom's main nozzle and the relay nozzles in its control panel	-	-	-	-
<b>PC3.</b> test the main nozzle and the relay nozzles and their settings using the control panel of the loom	-	-	-	-
<b>PC4.</b> fix the relay nozzles as per the width of the fabric in the nozzle rail using specified tools	-	-	-	-
<b>PC5.</b> monitor the operation of leno selvedge mechanism	-	-	-	-
<b>PC6.</b> actuate the emergency button in the airjet looms as per the instruction	-	-	-	-
<b>PC7.</b> set the weft selector function as per the weft design requirements in the airjet loom control panel	-	-	-	-
<b>NOS Total</b>	<b>66</b>	<b>156</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	TSC/N2224
<b>NOS Name</b>	Execute loom controls and settings - Airjet Loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving - Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N2225: Execute loom controls and settings - Rapier Loom

### Description

This OS unit is about performance criteria, knowledge and understanding and generic skills required for managing the loom controls and setting in rapier looms.

### Scope

The scope covers the following :

- Monitor and set loom controls in rapier loom

### Elements and Performance Criteria

#### *Monitor and set loom controls in rapier loom*

To be competent, the user/individual on the job must be able to:

- PC1.** check the condition and functioning of rapier looms' weft insertion mechanism such as single, double, rigid, flexible rapier, etc.
- PC2.** set the grippers, rapier tape and sprocket for the loom operation
- PC3.** handle rapier tape and gripper as per the standard guidelines
- PC4.** identify machine and fabric faults specific to weaving on rapier loom and rectify the same
- PC5.** set the filling yarn cutter according to the fabric width requirements
- PC6.** thread the weft yarn from pre-winder to the gripper as per the standard method
- PC7.** set the weft feeder function as per the weft design requirements in the rapier loom control panel

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** types of rapier looms with their weft feed systems
- KU2.** rapier weft insertion mechanism, its parts and their importance
- KU3.** potential hazards and specific safety measures and precautions associated with operation of rapier loom
- KU4.** importance of proper picking force for efficient working of rapier loom
- KU5.** functions of different parts of rapier shuttle-less loom
- KU6.** minimum quality requirements of the product with respect to permissible /non- permissible defects in rapier loom
- KU7.** weft filling speed in meter per minute in the rapier loom
- KU8.** operating speed and width of the allotted rapier loom

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** write clear and short sentences
- GS2.** read and comprehend written production instructions
- GS3.** perform basic arithmetic calculations to find the production, production efficiency, etc.
- GS4.** communicate with colleagues and superiors as per standard protocol
- GS5.** plan the tasks based on instructions from superiors

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Monitor and set loom controls in rapier loom</i>	<b>66</b>	<b>156</b>	-	-
<b>PC1.</b> check the condition and functioning of rapier looms' weft insertion mechanism such as single, double, rigid, flexible rapier, etc.	-	-	-	-
<b>PC2.</b> set the grippers, rapier tape and sprocket for the loom operation	-	-	-	-
<b>PC3.</b> handle rapier tape and gripper as per the standard guidelines	-	-	-	-
<b>PC4.</b> identify machine and fabric faults specific to weaving on rapier loom and rectify the same	-	-	-	-
<b>PC5.</b> set the filling yarn cutter according to the fabric width requirements	-	-	-	-
<b>PC6.</b> thread the weft yarn from pre-winder to the gripper as per the standard method	-	-	-	-
<b>PC7.</b> set the weft feeder function as per the weft design requirements in the rapier loom control panel	-	-	-	-
<b>NOS Total</b>	<b>66</b>	<b>156</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	TSC/N2225
<b>NOS Name</b>	Execute loom controls and settings - Rapier Loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving - Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N2226: Execute loom controls and settings - Waterjet Loom

### Description

This OS unit is about performance criteria, knowledge and understanding and generic skills required for managing the loom controls and setting in waterjet looms.

### Scope

The scope covers the following :

- Monitor and set loom controls in waterjet loom

### Elements and Performance Criteria

#### *Monitor and set loom controls in waterjet loom*

To be competent, the user/individual on the job must be able to:

- PC1.** monitor the condition and functioning of waterjet looms' weft insertion mechanism like weft gripper, scissor blades, nozzles, weft accumulator, tension regulator, etc.
- PC2.** set the pressure settings according to weft count in main nozzle and relay nozzles in the control panel of the loom
- PC3.** test the nozzles and their settings using the control panel of the loom
- PC4.** fix the nozzles as per the width of the fabric in the nozzle rail using specified tools
- PC5.** monitor the operation of selvage mechanism in the waterjet looms
- PC6.** actuate the emergency button in the waterjet looms as per the instruction
- PC7.** ensure the availability of water as per the production requirements in the waterjet looms

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** importance of material handling and types of material handling equipment used in waterjet loom shed
- KU2.** potential hazards associated with the waterjet looms and important safety precautions to be taken
- KU3.** importance of prescribed jet pressure, for efficient working of waterjet looms
- KU4.** minimum quality requirements of the product with respect to permissible and non-permissible defects of waterjet shuttleless loom
- KU5.** filament types and varieties can be used in the waterjet looms for fabric production
- KU6.** functions of different parts of waterjet loom
- KU7.** process flow and material flow in a waterjet loom shed
- KU8.** weft filling speed in meter per minute in the waterjet looms
- KU9.** operating speed and width of the allotted waterjet looms
- KU10.** quality requirement of water required for waterjet weaving



## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** write clear and short sentences
- GS2.** read and comprehend written production instructions
- GS3.** perform basic arithmetic calculations to find the production, production efficiency, etc.
- GS4.** communicate with colleagues and superiors as per standard protocol
- GS5.** plan the tasks based on instructions from superiors

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Monitor and set loom controls in waterjet loom</i>	<b>66</b>	<b>156</b>	-	-
<b>PC1.</b> monitor the condition and functioning of waterjet looms' weft insertion mechanism like weft gripper, scissor blades, nozzles, weft accumulator, tension regulator, etc.	-	-	-	-
<b>PC2.</b> set the pressure settings according to weft count in main nozzle and relay nozzles in the control panel of the loom	-	-	-	-
<b>PC3.</b> test the nozzles and their settings using the control panel of the loom	-	-	-	-
<b>PC4.</b> fix the nozzles as per the width of the fabric in the nozzle rail using specified tools	-	-	-	-
<b>PC5.</b> monitor the operation of selvedge mechanism in the waterjet looms	-	-	-	-
<b>PC6.</b> actuate the emergency button in the waterjet looms as per the instruction	-	-	-	-
<b>PC7.</b> ensure the availability of water as per the production requirements in the waterjet looms	-	-	-	-
<b>NOS Total</b>	<b>66</b>	<b>156</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	TSC/N2226
<b>NOS Name</b>	Execute loom controls and settings - Waterjet Loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving - Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## TSC/N2227: Execute loom controls and settings - Projectile Loom

### Description

This OS unit is about performance criteria, knowledge and understanding and generic skills required for managing the loom controls and setting in projectile loom.

### Scope

The scope covers the following :

- Monitor and set loom controls in projectile loom

### Elements and Performance Criteria

#### *Set loom controls in projectile loom*

To be competent, the user/individual on the job must be able to:

- PC1.** monitor the condition of various machine parts and mechanisms in a projectile loom such as projectile, torsion bar, projectile accelerator, etc.
- PC2.** clean the conveyor belt for smooth movement of the projectile weft carrier
- PC3.** maintain the projectiles as per the standard guidelines
- PC4.** load the projectiles in picking position in the shuttle box
- PC5.** stop the projectile loom at the right position on a weft break
- PC6.** re-thread the projectile for weft break as per the standard method
- PC7.** take out projectile stuck from the shuttle box as per the standard method
- PC8.** perform greasing and minor repair and maintenance activities as per the schedule in the waterjet loom

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** parts of the projectile loom including the weft insertion mechanism and their functions
- KU2.** projectile dimensions and its configurations
- KU3.** tuck-in selvedge mechanism, parts involved and settings
- KU4.** timing circle of the projectile loom
- KU5.** advantages and limitation of projectile loom over other shuttleless looms
- KU6.** potential hazards and crucial safety precautions associated with the operation of a projectile loom
- KU7.** importance of proper arrangement of projectile and conveyor belt, for efficient working of projectile loom
- KU8.** machine and fabric faults specific to projectile and their repairing methods
- KU9.** weft filling speed in meter per minute in the projectile loom
- KU10.** operating speed and width of the allotted projectile loom

## **Generic Skills (GS)**

User/individual on the job needs to know how to:

- GS1.** write clear and short sentences
- GS2.** read and comprehend written production instructions
- GS3.** perform basic arithmetic calculations to find the production, production efficiency, etc.
- GS4.** communicate with colleagues and superiors as per standard protocol
- GS5.** plan the tasks based on instructions from superiors

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Set loom controls in projectile loom</i>	<b>66</b>	<b>156</b>	-	-
<b>PC1.</b> monitor the condition of various machine parts and mechanisms in a projectile loom such as projectile, torsion bar, projectile accelerator, etc.	-	-	-	-
<b>PC2.</b> clean the conveyor belt for smooth movement of the projectile weft carrier	-	-	-	-
<b>PC3.</b> maintain the projectiles as per the standard guidelines	-	-	-	-
<b>PC4.</b> load the projectiles in picking position in the shuttle box	-	-	-	-
<b>PC5.</b> stop the projectile loom at the right position on a weft break	-	-	-	-
<b>PC6.</b> re-thread the projectile for weft break as per the standard method	-	-	-	-
<b>PC7.</b> take out projectile stuck from the shuttle box as per the standard method	-	-	-	-
<b>PC8.</b> perform greasing and minor repair and maintenance activities as per the schedule in the waterjet loom	-	-	-	-
<b>NOS Total</b>	<b>66</b>	<b>156</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	TSC/N2227
<b>NOS Name</b>	Execute loom controls and settings - Projectile Loom
<b>Sector</b>	Textile
<b>Sub-Sector</b>	Weaving – Textiles
<b>Occupation</b>	Weaving
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Clearance Date</b>	

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.

The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

### Minimum Aggregate Passing % at QP Level : 70

**(Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to

successfully clear the Qualification Pack assessment.)

## Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TSC/N2222.Taking charge of shift and handing over shift to operator - shuttleless loom	24	54	-	-	78	9
TSC/N2223.Operate the shuttleless loom	108	252	-	-	360	40
TSC/N9015.Follow machine, safety, and organizational guidelines in textile sector	65	80	-	50	195	22
TSC/N9016.Follow teamwork, adaptability, and communication guidelines in textile sector	15	20	-	10	45	5
<b>Total</b>	<b>212</b>	<b>406</b>	<b>-</b>	<b>60</b>	<b>678</b>	<b>76</b>

Elective: 1 Airjet loom

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TSC/N2224.Execute loom controls and settings - Airjet Loom	66	156	-	-	222	24
<b>Total</b>	<b>66</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>222</b>	<b>24</b>

Elective: 2 Ravier loom



National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TSC/N2225.Execute loom control and settings - Rapier loom	66	156	-	-	222	24
<b>Total</b>	<b>66</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>222</b>	<b>24</b>

Elective: 3 Waterjet loom

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TSC/N2226.Execute loom control and settings - Waterjet loom	66	156	-	-	222	24
<b>Total</b>	<b>66</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>222</b>	<b>24</b>

Elective: 4 Projectile loom

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TSC/N2227.Execute loom controls and settings - Projectile loom	66	156	-	-	222	24
<b>Total</b>	<b>66</b>	<b>156</b>	<b>0</b>	<b>0</b>	<b>222</b>	<b>24</b>

## Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training

## Glossary

<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.