Skill India
कौशल भारत-कुशल भारत

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

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TEXTILE SECTOR SKILL COUNCIL
TSC
PERFECTING SKILLS

Participant Handbook

Sector
Textile Sector Skill Council

Sub-Sector
Spinning

Occupation
Tenter - Post Spinning

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Autoconer Tenter

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> Skilling is building a better India. If we have to move India towards development then Skill Development should be our mission.

Shri Narendra Modi
Prime Minister of India

Certificate

COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

TEXTILE SECTOR SKILL COUNCIL

for

SKILLING CONTENT : PARTICIPANT HANDBOOK

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Autoconer Tenter**' QP No. '**TSC/Q 0301**'; **NSQF level 4**

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Dr. J.V. Rao
CEO
(Textile Sector Skill Council)

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TSC also sincerely thanks Ministry of Skill Development & Entrepreneurship (MSDE) and National Skill Development Corporation (NSDC) in supporting us to prepare the Handbook.

Endorsements

We thank the following organizations for endorsing the contents of this Participant Handbook, thus contributing towards skilling based on the Qualification Pack (QP) and National Occupational Standards (NOSs)

About this book

This Participant Handbook is designed to be an aid for individuals undergoing training for the job role of Autoconer tenter under the various schemes of the Textile Sector Council. The various topics covered in this book are in line with the National Occupational Standards and the individual chapters/Units are in sync with the various NOSs listed in the Qualification Pack (QP) for Autoconer tenter.

Textile industry has been a core industry for the human civilization from time immemorial as clothing ranks next only to food and water in terms of man's basic needs. India for long has been the cradle of Textile Industry. It is has been an integral part of India's industrial space along with the agricultural sector. Indian Textile Industry is the second largest in the world and provides about 15% employment potential along with the earning of about 30% of total foreign exchange earned during the current year.

Spinning refers to conversion of fibres derived from either cotton or man-made fibres, into yarn which is a continuous seamless thread. The Autoconer tenter plays an important role in the production of continuous uncut faultless yarns in different package forms. Ring bobbins which are the products of the previous stage (spinning), are converted into large cones with removal of faults in the yarn.

This book describes the importance of the textile sector, and gives the trainee an idea of process flow in textile processing industry. It also explains the role of Autoconer tenter for the different functions he has to carry out in his department along with other generic attributes that are required namely, handling of tools in the department, knowledge of safe working in the department, safety precautions to be taken, working in a team and having a fair knowledge of the organization and commitment to it. The book enlists important parts of an Autoconer machine along with their function which is very helpful for the knowledge of an operative working in it. This trainee manual also guides the trainees about the operating procedures in the Autoconer winding department, step by step operations in cop filling and doffing of the cops.

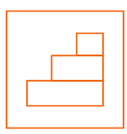
The Dos and don'ts on an Autoconer machine are also discussed. The importance of taking charge and handing over of shift, material handling, housekeeping and maintenance to be carried out in the department are also discussed in detail.

Needless to say that, this book will be of immense use to an Autoconer tenter to develop acquire the necessary skills for effective functioning in a spinning mill.

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Symbols Used


Key Learning Outcomes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1. Introduction

Key Learning Outcomes

AAt the end of this module, you will be able to:

1. Know about the spinning industry and the various departments in a spinning mill
2. Understand the basic textile terms
3. Discuss about your role in this department
4. Understand your job role and your responsibilities as a tenter
5. Understand the material process flow in a spinning mill
6. Know about the winding process, functioning of autoconer and its parts
7. Know how to operate the autoconer by carrying out general tenting activities
8. Know how to fill the ring cops and doffing the cone packages
9. Understand how to carry out cleaning and maintenance activities in your section
10. Realise that you need certain behavioral, professional, technical and communication skills in your job.
11. Understand the importance of maintaining a safe, hygienic and secure working environment
12. Be confident in operating tools and machines in your department.

UNIT 1.1 : Textile industry in India

Unit Objectives

At the end of this unit, you will be able to understand and know the:

1. Textile industry in India and the various sectors in textiles
2. Raw materials used in the textile industry
3. Basic textile terms in spinning
4. Sequence of spinning process and machines
5. Material flow in spinning mill

1.1.1 Beginning of Textile Industry in India

India is the cradle of Textile Industry. It is the mother industry of all other industries. Indian Textile Industry is the second largest in the world and provides about 15% employment potential along with the earning of about 30% of total foreign exchange earned during the current year. The first textile mill was started in 1854 by C.N.Dever at Bombay. In 1856, the second mill was started by Chotalal at Ahmedabad where the imported textile machineries from U.K. were transported from Bombay to Ahmedabad by bullock carts. Later the textile mills were installed at different parts of India to cater the clothing needs of people.

Bombay and Ahmedabad became the most important textile centers in India due to tremendous development in textiles. Indian cotton textile industry is well established with the installation of 51 million spindles, 8,59,000 rotors and 67,000 looms in the organised sector.

Indian textile industry consists of cotton textiles, Jute mills, silk mills and woollen textiles. 70% of textile mills are cotton textiles and they are concentrated in Bombay, Ahmedabad, and Coimbatore. Silk mills are concentrated around Surat (Gujarat State). Few cotton textile mills are also installed in West Bengal and Bengal Cotton sarees are still famous today. Many jute mills are installed in West Bengal (in and around Calcutta).

1.1.2 Structure of Cotton Textile Industry

Cotton textile industry accounts for about 70% of textile mills in India. It can be broadly classified into 'organised sector and decentralised sector. Organised sector consists of spinning mills, composite mills and full fledged textile mills. Decentralised sector consists of handlooms, powerlooms, knitting and Khadi industries. At present, about 24 lakhs handlooms are working in India and it provides very high rural employment potential. Handlooms produce very fine quality and artistic clothing materials which manifest our cultural heritage which is maintained even today, in spite of rapid advancements in technology. The details of Indian Textile Industry are given in Table 1.

Table 1 Indian Textile Industry (2015)

Cotton Textiles	**3119**
Composite	**200**
Jute Mills	**78**
Silk	**300**
Spindles	**51 million**
Rotors	**8.59 Lakh**
Shuttle loom	**0.5 Lakh**
Shuttleless loom	**22 Lakh**
Handloom	**38.91 Lakh**
Employment	**9.31 Lakh**
Cotton	**353 lakh bale**

Powerlooms provide more employment potential in urban and rural areas. About 22 lakh powerlooms are operating in India and powerloom industry produces fabric for both domestic and export markets.

Knitting industry plays a dominant role in textile exports. Knitting sector alone accounts for a major portion of textile exports.

Khadi industries also produce apparel and household textiles and it is supported by Government of India to meet the competition from the organised sector and power looms. Khadi industries are encouraged by both state and central governments to provide more rural employment potential.

1.1.3 Raw Materials for Textile Industry

Cotton is the most widely used fibre in Textile Industry. Cotton is grown in 80 countries and more than **125** million people are involved in cotton production and around **175** million people are working in cotton Textile Industry (44% world textile fibre production). Natural fibres such as cotton, wool, silk alone accounts for about 52% of world textile fibre production. In India, cotton alone accounts for about 80% of total fibre production.

Textile fibres can be broadly classified into Natural fibres and man made fibres. Natural fibres are directly available in the form of fibres. Man made fibres are the fibres which are produced by means of using various chemical processes and finally by wet, melt and dry spinning techniques. The first man made fibre was made successfully by Count Hilarie de Chordonnet in 1884 and he exhibited fabrics made from Nitro cellulose in 1889 at Paris exhibition. Later viscose, cuprammonium rayon, and acetate fibres were developed. The first synthetic fibre was developed by Dr. Carothers in 1938 at Dupont Laboratories U.S.A. and Terylene was developed by Winfield and Dixon in 1942 at Calico Research Laboratories in Lankashire, U.K. Later Polyethylene, polypropylene, poly acrylonitrile fibres were developed due to continuous intensive research activities by different laboratories in USA and U.K. Table 5 gives the details of raw materials for textile fibre production.

1.1.4 Cotton end uses

Type of Cotton Range (Ne)	Yarn Count	End uses
Short Staple	6s to 20s	Coarser Quality Fabric Sheeting, Dhoti, Household and Industrial Fabrics
Medium Staple	21s to 40s	Medium Quality Fabric Shirting, Suiting, Knitted Fabrics, Garments
Long Staple	41s to 60s	Fine Quality Fabrics Dhoties, Sarees, Shirting Suiting
Extra Long	61s to 100s	Super Fine Quality Fabrics Dhoties, Sarees, Shirtings

100% cotton yarns are produced for making coarse, medium, and fine quality fabrics. Cotton and man made fibres such as Viscose, polynosic, polyester are blended at blow room and fine quality yarns are produced for making various types of dress materials.