# STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN
# (NATIONAL OCCUPATIONAL SKILLS STANDARD)

## INDUSTRIAL SEWING MACHINE MAINTENANCE
## LEVEL 2
## TA-014-2:2014


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**Ministry of Human Resources**

**62530 PUTRAJAYA, MALAYSIA**

# STANDARD KEMAHIRAN PEKERJAAN KEBANGSAAN (NATIONAL OCCUPATIONAL SKILLS STANDARD)

FOR

# INDUSTRIAL SEWING MACHINE MAINTENANCE LEVEL 2

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**STANDARD PRACTICE**

**NATIONAL OCCUPATIONAL SKILLS STANDARD (NOSS) FOR INDUSTRIAL SEWING MACHINE MAINTENANCE LEVEL 2**

# 1. INTRODUCTION

The apparel manufacturing industry is primarily a labour-intensive industry that utilises many operator-control tools and equipment to produce garments. The industrial sewing machine is essential equipment for garment making without which, garments cannot be made quickly and economically. The proper maintenance of industrial sewing machines is of vital importance in ensuring that these machines are safe to use, operating at optimum efficiency and producing quality output that complies with production and diverse style requirements. Maintenance jobs include machine installation, set-up, fabrication of attachments and work aids, scheduled maintenance and repair of various types of standard and specialised industrial sewing machines.

Malaysia has an extensive experience as a producer of high end international brands under contract manufacturing arrangement emphasising on design, production and high quality finishing. In addition, various made in Malaysia apparels have also gained international recognition for their quality, reliability and quick as well as prompt delivery. The mixed culture and international exposure of designers have enabled Malaysia to produce varied clothes suitable for all markets, from Asia, Europe to the Middle East. Malaysia is currently known for its fashionable Islamic apparels.

Hence, the development of competent Industrial Sewing Machine Maintenance personnel is of vital importance, not only to meet the shortage of skilled workers in this industry, but also to ensure quality garment outputs that suit the high fashion and increasingly sophisticated market.

## 1. Occupational Overview

Industrial Sewing Machine Maintenance Level 2 personnel perform maintenance based on work order and assist industrial sewing machine maintenance supervisor in all maintenance works. The routine tasks for this occupation include industrial sewing machine installation, industrial sewing machine pre-operating set-up, industrial sewing machine production set-up, industrial sewing machine attachment and work aids making, industrial sewing machine scheduled maintenance and industrial sewing machine repair. Industrial sewing machine maintenance personnel work on various types of industrial sewing machines such as Lockstitch, Overlock, Interlock, Button Hole, Zig Zag, Bartack, Buttoning, Snap Button and Chainstitch. They are

required to adhere to work order and industrial sewing machine manual specifications to ensure that the industrial sewing machines are safe and ready for production. The Industrial Sewing Machine Maintenance personnel are required to practice workplace safety, security and cleanliness at all times in the apparel manufacturing factory.

Performing industrial sewing machine setup, scheduled maintenance and repair is not an easy task as the maintenance personnel are required to maintain a high degree of concentration and attentiveness on machine operations and mechanical problems as well as to obtain output samples. Apart from these, due to the nature of the occupation, Industrial Sewing Machine Maintenance personnel are required to possess a safety oriented mind-set and adhere to all workplace safety, security and cleanliness policies to avoid machineries, equipment and other occupational hazards.

According to the Occupational Analysis findings, Industrial Sewing Machine Maintenance is under the sub-sector of Apparel Manufacturing while the job area is Machine Maintenance (Sewing Machine). Figure 1.1 and 1.2 are the Occupational Structure and Occupational Area Structure respectively showing the position of Industrial Sewing Machine Maintenance job area within the apparel manufacturing sub-sector.

The industry observes that Industrial Sewing Machine Maintenance is a critical job area to support the textile and apparel industry's skill shortage in Malaysia. Consequently, the development of this Industrial Sewing Machine Maintenance NOSS is essential in developing skilled workers in this area.

## 2. Justification and Rationale for NOSS Development

This NOSS development is an initiative to support the high demand for skilled personnel in the apparel manufacturing industry which is facing serious shortage particularly for this job area. Currently, industrial sewing machine maintenance personnel acquire their skills from on-the-job training in an ad hoc manner. This NOSS provides a basis for formal and systematic training. It can also be used to certify experienced maintenance personnel. Trained and competent personnel will be able to support the activities in the apparel manufacturing industry which provides employment opportunities in the private sector and subsequently generate income for the country

This document covers the competency standard of Industrial Sewing Machine Maintenance (Level 2) that is presently significant in the apparel manufacturing industry.

### 3. Regulatory Requirements

None

## 2. OCCUPATIONAL STRUCTURE

The Occupational Structure is described and analysed by means of various classificatory schemes, which consist of similar occupations grouped together according to specific criteria such as skills, employment status, or functions.

### 1. Occupational Structure

The Occupational Structure of Industrial Sewing Machine Maintenance is as shown in Figure 1.1 on Page iv. Industrial Sewing Machine Maintenance (Level 2) comes under the sub sector of Apparel Manufacturing while the job area is Machine Maintenance (Sewing Machine).

### 2. Occupational Area Structure

The Occupational Area Structure for Industrial Sewing Machine Maintenance is illustrated in Figure 1.2 on Page v. After much deliberation among the Panel Experts, the NOSS title for this occupational area is Industrial Sewing Machine Maintenance under the sub sector of Apparel Manufacturing while the job area is Machine Maintenance (Sewing Machine).

### 3. NOSS Occupational Area Structure and Level Justification

The panel of experts concluded that this job area starts with Level 2 as the job requires competency in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and require individual responsibility and autonomy.

Most of the activities in this occupation involve various types of industrial sewing machines which are automated. The operation of these sophisticated machines needs skilled personnel at Level 2. Equipped with knowledge and skills in machine operations, maintenance, production, work safety and regulatory/statutory requirements, and with additional support from a Level 3 supervisor, they will be able to carry out their job functions effectively and satisfactorily.

.

| SECTOR | TEXTILE & APPAREL | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB SECTOR | APPAREL MANUFACTURING | | | | | | | | | | | |
| AREA | MASS PRODUCTION | | | | | | | | | | | |
| JOB AREA | CUTTING SECTION | | | | SEWING SECTION | FINISHING SECTION | | | | QUALITY ASSURANCE | APPAREL MANUFACTURING MACHINE MAINTENANCE | |
| | PATTERN MAKING | MARKER PLANNING | CUTTING | EMBROIDERY | | TRIMMING | IRONING | FOLDING | PACKING | | SEWING MACHINE | PLANT AND FACILITY |
| LEVEL 5 | PLANT MANAGER | | | | | | | | | QUALITY ASSURANCE MANAGER | MAINTENANCE MANAGER | |
| LEVEL 4 | CUTTING EXECUTIVE | | | | SEWING EXECUTIVE | FINISHING EXECUTIVE | | | | QUALITY ASSURANCE EXECUTIVE | MAINTENANCE EXECUTIVE | |
| LEVEL 3 | *SENIOR PATTERN MAKER | *SENIOR MARKER PLANNER | *CUTTING SUPERVISOR | *EMBROIDERY SUPERVISOR | *SEWING SUPERVISOR | FINISHING SUPERVISOR | | | | QUALITY ASSURANCE SUPERVISOR | INDUSTRIAL SEWING MACHINE SUPERVISOR | PLANT & FACILITY SUPERVISOR |
| LEVEL 2 | *PATTERN MAKER | *PLANNER | *CUTTING OPERATOR | *EMBROIDERY SENIOR OPERATOR | SEWING SENIOR OPERATOR | FINISHING OPERATOR | | | | QUALITY ASSURANCE INSPECTOR | INDUSTRIAL SEWING MACHINE SENIOR TECHNICIAN | MAINTENANCE SENIOR TECHNICIAN |
| LEVEL 1 | NO LEVEL | NO LEVEL | NO LEVEL | *EMBROIDERY OPERATOR | *SEWING OPERATOR | FINISHING OPERATOR | | | | NO LEVEL | INDUSTRIAL SEWING MACHINE TECHNICIAN | MAINTENANCE TECHNICIAN |

Fig. 1.1 Occupational Structure for Textile and Apparel Industry Maintenance Personnel

| SECTOR | TEXTILE & APPAREL | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SUB SECTOR | APPAREL MANUFACTURING | | | | | | | | | | |
| AREA | MASS PRODUCTION | | | | | | | | | | |
| JOB AREA | CUTTING SECTION | | | | SEWING SECTION | FINISHING SECTION | | | | QUALITY ASSURANCE | APPAREL MANUFACTURING MACHINE MAINTENANCE | |
| | PATTERN MAKING | MARKER PLANNING | CUTTING | EMBROIDERY | | TRIMMING | IRONING | FOLDING | PACKING | | SEWING MACHINE | PLANT AND FACILITY |
| LEVEL 5 | PLANT MANAGEMENT | | | | | | | | | QUALITY ASSURANCE MANAGEMENT | MAINTENANCE MANAGEMENT | |
| LEVEL 4 | CUTTING EXECUTION | | | | SEWING EXECUTION | FINISHING EXECUTION | | | | QUALITY ASSURANCE EXECUTION | MAINTENANCE PLANNING & CONTROL | |
| LEVEL 3 | *PATTERN MAKING | *MARKING | *CUTTING SUPERVISION | *EMBROIDERY SUPERVISION | *SEWING SUPERVISION | FINISHING SUPERVISION | | | | QUALITY ASSURANCE SUPERVISION | INDUSTRIAL SEWING MACHINE MAINTENANCE SUPERVISION | PLANT & FACILITY SUPERVISION |
| LEVEL 2 | *PATTERN MAKING | *PLANNING | *CUTTING OPERATION | *EMBROIDERY OPERATION | SEWING OPERATION | FINISHING OPERATION | | | | QUALITY ASSURANCE INSPECTION | INDUSTRIAL SEWING MACHINE MAINTENANCE | MAINTENANCE OPERATION |
| LEVEL 1 | NO LEVEL | NO LEVEL | NO LEVEL | NO LEVEL | NO LEVEL | NO LEVEL | | | | NO LEVEL | NO LEVEL | NO LEVEL |

Figure 1.1: Occupational Area Structures for Industrial Sewing Machine Maintenance

## 3. DEFINITION OF COMPETENCY LEVELS

The NOSS is developed for various occupational areas. Candidates for certification must be assessed and trained at certain levels to substantiate competencies. Below is a guideline of each NOSS Level as defined by the Department of Skills Development, Ministry of Human Resources, Malaysia.

| | |
|---|---|
| Level 1 | Competent in performing a range of varied work activities, most of which are routine and predictable. |
| Level 2 | Competent in performing a significant range of varied work activities, performed in a variety of contexts. Some of the activities are non-routine and required individual responsibility and autonomy. |
| Level 3 | Competent in performing a broad range of varied work activities, performed in a variety of contexts, most of which are complex and non-routine. There is considerable responsibility and autonomy and control or guidance of others is often required. |
| Level 4 | Competent in performing a broad range of complex technical or professional work activities performed in a wide variety of contexts and with a substantial degree of personal responsibility and autonomy. Responsibility for the work of others and allocation of resources is often present. |
| Level 5 | Competent in applying a significant range of fundamental principles and complex techniques across a wide and often unpredictable variety of contexts. Very substantial personal autonomy and often significant responsibility for the work of others and for the allocation of substantial resources features strongly, as do personal accountabilities for analysis, diagnosis, planning, execution and evaluation. |

## 4. AWARD OF CERTIFICATE

The Director General shall award to any person upon successful completion of the NOSS programme the following skills level qualifications:

a) Malaysian Skills Certificate / Sijil Kemahiran Malaysia (SKM) Level 1, 2 & 3

b) Malaysian Skills Diploma / Diploma Kemahiran Malaysia (DKM) Level 4

c) Malaysian Skills Advanced Diploma / Diploma Lanjutan Kemahiran Malaysia (DLKM) Level 5

d) Statement of Achievement / Penyata Pencapaian (PC)

No person shall be awarded a Certificate unless he/ she satisfies the requirements set by the Malaysian Skills Certification System.

## 5. JOB COMPETENCIES

Industrial Sewing Machine Maintenance Level 2 personnel are competent in the following competencies:

### 1. List of Core Competencies

- Industrial Sewing Machine Installation
- Industrial Sewing Machine Pre-Operating Set-up
- Industrial Sewing Machine Production Set-up
- Industrial Sewing Machine Attachment and Work Aids Making
- Industrial Sewing Machine Scheduled Maintenance
- Industrial Sewing Machine Repair

### 2. List of Elective Competencies

- None

## 6. WORKING CONDITIONS

### 1. Working environment

The Industrial Sewing Machine Maintenance personnel should be able to work on shift and may be required to extend their working hours (overtime) as required by their employer particularly during peak production period. They are expected to work under factories environment and as such, are required to be disciplined in meeting deadlines and observe the company's Safe Work Procedures (SWP).

Good eyesight (non-colour blind) is needed for visual inspection during set up, maintenance and repair of industrial sewing machines.

2. Issues Related to Area of Work

It is mandatory for Industrial Sewing Machine Maintenance personnel to wear personal protective equipment (PPE) such as mask, safety shoes, goggles and head cap while performing the job. They are not allowed to wear conductive articles of jewellery and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) to avoid accidents. The Industrial Sewing Machine Maintenance personnel must be able to maintain a high degree of alertness at all times while handling machines, equipment and threads.

## 7. EMPLOYMENT PROSPECTS

### 1. Malaysian Market

The 2010 Economic Census from the Department of Statistics, Malaysia determined that there are 2,300 firms (minus custom tailors) within the textile and apparel industry in Malaysia which employs 76,578 workers. The two major sectors in the industry are textiles manufacturing which has 959 establishments (42.7%) employing 30,866 workers and wearing apparel manufacturing which has 1,288 establishments (57.3%) employing 45,692 workers. The predominant sub-sectors in textile and apparel industry are manufacture of wearing apparel (55.1%), manufacture of other textiles (27.3%), spinning, weaving and finishing of textiles (15.3%), manufacture of knitted & crocheted apparel (1.5%) and manufacture of articles of fur (0.8%).

The textile and apparel industry is an important industry to the Malaysian economy. The Malaysian exports of textile and apparel industry for the year 2011 totalled RM10.8 billion while imports amounted to RM6.6 billion. In 2011, the textile and apparel industry was the tenth largest export earner, contributing approximately 1.6% to Malaysia's exports and 2.3% to Malaysia's total exports of manufactured goods. Due to its importance, the availability of trained manpower is a key issue for the textile and apparel industry.

The Malaysian textile and apparel industry with the exception of batik making is highly dependent on labour. A large portion of the textile and apparel industry has low technical support particularly industrial sewing machine technicians. The availability of competent technicians is highly important for the growth of the industry and the country.

Upon completion of the Competency Units (Core), other related occupations

with respect to employment opportunities are:

- Industrial Sewing Machine Maintenance Trainer
- Industrial Sewing Machine Sales Personnel

Other related industries with respect to employment opportunities are:

- Education (Fashion and Design)
- Fashion house/Boutique
- Industrial Sewing Machine Merchandising
- Tailoring

## 2. International Market

The textile and apparel industry is one of the oldest and largest export industries in the world. It is also one of the most global industries because many nations manufacture products for the international textile and apparel market. Apparel industry is the typical starter industry for countries engaged in export-oriented industrialisation due to low fixed costs and emphasis on labour-intensive manufacturing. According to WTO and OECD statistics, the world merchandise textile and apparel trade grows at 7% annual compound growth rate.

The textile and apparel industry is estimated at USD 702 billion and is expected to grow at a rate of 5% in the next 10 years. The EU, US, China, Japan and India are the biggest market for apparel, but apparel production is primarily concentrated in China, India, Bangladesh, Vietnam and Turkey.

The January 2014 update on World Economic Outlook (WEO), International Monetary Fund (IMF) observed that the global activity strengthened during the second half of 2013 and that global economic recovery will pick up in 2014-2015. Global growth is projected to expand from 3% in 2013 to 3.7% in 2014, rising to 3.9 % in 2015. In this regard, the textile and apparel industry would be expected to grow and demand for skilled workers would be great. Thus, personnel in the area of Industrial Sewing Machine Maintenance are important to meet the demand of the industry not only in Malaysia but also in other parts of the world.

## 3. List of Industry Sector Employers

Some of the major industry employers include:

- Pen Apparel Sdn Bhd
- Tai Wah Garment Industry Sdn Bhd

- Honsin Apparel Sdn Bhd
- Hing Yiap Knitting Industries Sdn Bhd
- Canteran Apparel Sdn Bhd

**4. Codes, Standard and Practices in the Sector, Sub sector/ Areas in Malaysia**

- None

## 8. TRAINING, INDUSTRIAL/ PROFESSIONAL RECOGNITION, OTHER QUALIFICATIONS AND ADVANCEMENT

As for career advancement, most competent technicians learn their craft on the job. They usually begin as qualified industrial sewing machine maintenance technician and gradually learn new skills as they gain experience. Further certification may increase their chances of career advancement. Thus with additional formal training/education and certification, the experienced and competent industrial sewing machine maintenance technician can advance to become a supervisor and even up to Maintenance Manager.

### 1. Industrial Recognition/ Professional Qualification

None

### 2. Other Prominent Qualification Recognised Locally or Internationally

None

### 3. Types of Occupation for Career Advancement

- Industrial Sewing Machine Maintenance Supervisor
- Maintenance Executive
- Maintenance Manager
- Factory Manager

### 4. Related Industries

- Fashion And Design
- Clothing Retail Industry
- Furniture Making
- Vehicle Accessories

## 9. SOURCES OF ADDITIONAL INFORMATION

### 1. NATIONAL

- Malaysian Textile and Apparel Centre (MATAC)
  C-9-4, Megan Avenue 1
  189 Jalan Tun Razak
  50400 Kuala Lumpur, Malaysia
  Tel: +603-2162 1454 Fax:+603-21625148
  Email: info@mtma.org.my

- Malaysian Textile Manufacturers Association (MTMA)
  C-9-4, Megan Avenue 1
  189 Jalan Tun Razak
  50400 Kuala Lumpur, Malaysia
  Tel: +603-2162 1454 Fax:+603-21625148
  Email: info@mtma.org.my

- Malaysian Knitting Manufacturers Association (MKMA)
  12-1, Jalan Megat, 83000 Batu Pahat
  Johor, Malaysia
  Tel: 607- 4343203
  Fax: 607 – 4314682
  Email:mkma@streamyx.com
  Website: http://www.mkma.org

- Malaysia External Trade Development Corporation (MATRADE)
  Menara MATRADE, Jalan Khidmat Usaha, Off Jalan Duta
  50480 Kuala Lumpur, Malaysia
  Tel:+603-6207 7077 Fax:+603-6203 7037
  Email: info@matrade.gov.my
  Website: www.matrade.gov.my

- Ministry of International Trade and Industry (MITI)
  Block 10, Government Offices Complex, Jalan Duta
  50622 Kuala Lumpur, Malaysia
  Tel:+603-80008000 Fax:603-62012337
  Email:webmiti@miti.gov.my

- Malaysian Investment Development Authority (MIDA)
  Block 4 Plaza Sentral Jalan Stesen Sentral 5
  50470 Kuala Lumpur, Malaysia
  Tel:+60 3-2267 3633

- Malaysia Production Corporation (MPC)
  Lorong Produktiviti, Off Jalan Sultan
  46200 Petaling Jaya
  Selangor Darul Ehsan, Malaysia
  Tel : 603 - 7955 7266 Fax : 603 - 7957 8068
  Email : marketing@mpc.gov.my

- Department of Occupational Safety and Health (DOSH)
  Ministry of Human Resource
  Level 2, 3 & 4, Block D3, Complex D
  Federal Government Administrative Centre
  62530 W. P. Putrajaya, Malaysia
  Tel: 603 - 8886 5000
  Fax: 603 - 8889 2443
  Email: jkkp@mohr.gov.my
  Web: http://www.dosh.gov.my
- Department of Standards Malaysia (Standards Malaysia)
  Century Square, Level 1 & 2, Block 2300
  Jalan Usahawan,63000 Cyberjaya, Selangor Darul Ehsan, Malaysia
  Tel: 603-8318 0002
  Fax: 603-8319 3131
  Email: central@standardsmalaysia.gov.my
  Web: http://www.standardsmalaysia.gov.my

- SIRIM Berhad
  No. 1, Persiaran Dato' Menteri, Seksyen 2
  Peti Surat 7035, 40700 Shah Alam
  Selangor Darul Ehsan
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  Tel: 603-55446000
  Fax: 603-55108095
  Email: web@sirim.my
  Web: http://www.sirim.my

**2. INTERNATIONAL**

- International Organization for Standardization
  ISO Central Secretariat
  1, ch. de la Voie-Creuse, CP 56
  CH-1211, Geneva 20
  Switzerland
  Tel: 41-22-749 01 11
  Fax: 41-22-733 34 30
  E-mail: central@iso.org
  Web: http://www.iso.org

- International Labour Organisation (ILO)
  4 route des, Morillons
  CH-1211,Geneva 22
  Switzerland
  Tel: 41-22-799-6111
  Fax: 41-22-798-8685
  Website: www.ilo.org
  E-mail: ilo@ilo.org

- International Textile and Apparel Association
  PO Box 70687
  Knoxville
  TN 37938-0687
  Telephone: 865-992-1535
  Email:executivedirector@itaaonline.org
  Web : http://www.itaaonline.org

- Taiwan Textile Federation
  5F, TTF Building
  No. 22, Ai Guo East Road
  10092 Taipei
  Taiwan
  Tel: 886-2-2341-7251.
  Fax: 886-2-2391-7712.
  Email: n341@textiles.org.tw, n411@textiles.org.tw.
  Web: www.textiles.org.tw

## 10. ACKNOWLEDGEMENT

This Standard has been proofread by qualified personnel, named as follows;

Name : Suhaila Hani Zaidin
Qualification : Bachelor of Arts, (English and Communication), 1999, University of Wisconsin, Madison, U.S.A

A draft of this Standard was circulated to the following list of companies for two weeks for validation and feedback:

1. Trans Pacific Industries Sdn Bhd
2. Tai Wah Garment Industry Sdn Bhd
3. Pegasus Industrial Sewing Machine (M) Sdn Bhd
4. Trans Pacific Industries Sdn Bhd

This Standard has been checked by the MATAC Coordinator, DSD and approved by the members of Skills Development Endorser Committee (SDEC) on **16 October 2014.** The SDEC members as listed below have reached a consensus on this standard.

1. Mr Seow Hon Cheong
2. Ms Ajantha A/P Shabari Shan
3. Mr Cheong Kwok Wah
4. Mr Ooi Chiew Yih

.

**11. COMMITTEE MEMBERS FOR DEVELOPMENT OF STANDARD PRACTICE (SP), COMPETENCY PROFILE CHART (CPC), COMPETENCY PROFILE (CP) AND CURRICULUM of COMPETENCY UNIT (CoCU)**

| **TA-014-2:2014 INDUSTRIAL SEWING MACHINE MAINTENANCE LEVEL 2** | | |
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| 1. | Rick Santana Anak Sunny | Tai Wah Garment Industry Sdn Bhd |
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| 4. | Mohd Hata Yusof | Knit Textiles |
| 5. | Chong Hoon Long | Keenway Industrial Sdn Bhd |
| 6. | Gan Cheng Say | Tai Wah Garment Industry Sdn Bhd |
| 7. | Teo Chee Wan | Perusahaan Chan Shoo Sing Sdn Bhd |
| 8. | John David Prakash | Kairos Alliance Sdn Bhd |
| 9 | Bahaunuddin bin Abdul Rashid | Selembar Gemilang Sdn Bhd |
| 10 | Jamizal bin Mohammad Zinul | Head of Centre/Trainer<br>Malaysian Textile and Apparel Centre (MATAC) Batu Pahat |
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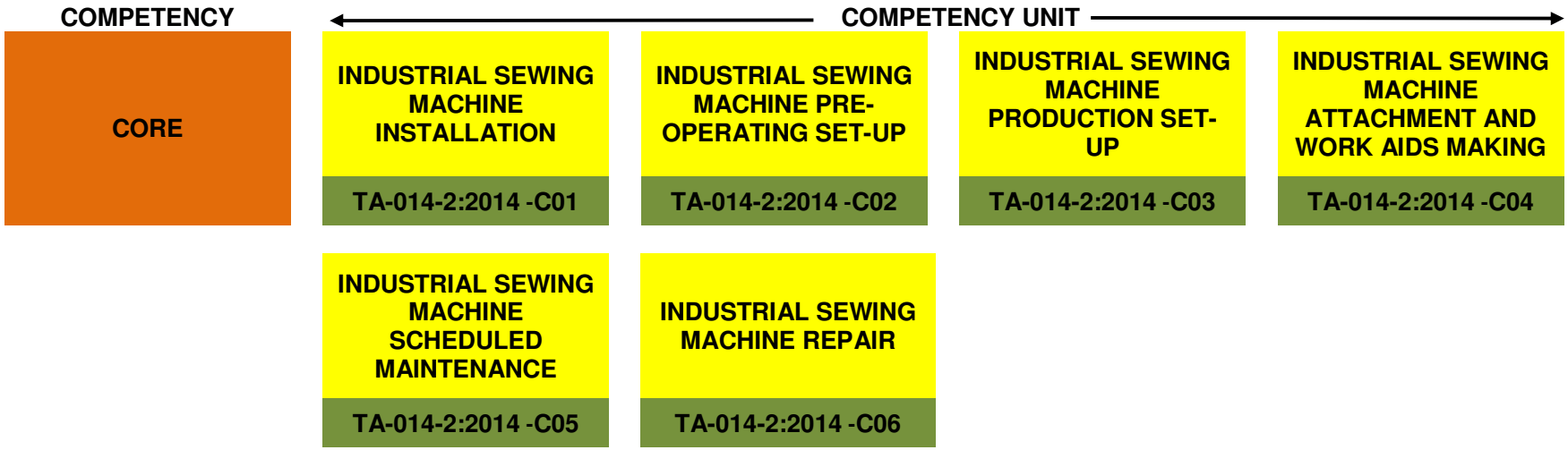
| **DOCUMENTOR** | | |
| 1. | Regina Leong | Malaysian Textile and Apparel Centre (MATAC) |

# COMPETENCY PROFILE CHART (CPC)

| | | | |
|---|---|---|---|
| SECTOR | TEXTILE AND APPAREL | | |
| SUB SECTOR | APPAREL MANUFACTURING | | |
| JOB AREA | MACHINE MAINTENANCE (SEWING MACHINE) | | |
| NOSS TITLE | INDUSTRIAL SEWING MACHINE MAINTENANCE | | |
| JOB LEVEL | TWO (2) | NOSS CODE | TA-014-2:2014 |



# COMPETENCY PROFILE (CP)

| | | | |
|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | |
| **SUB SECTOR** | **GARMENT MANUFACTURING** | | |
| **JOB AREA** | **MAINTENANCE** | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | |
| **LEVEL** | **TWO (2)** | **NOSS CODE** | **TA-014-2:2014** |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| 1. Industrial Sewing Machine Installation | TA-014-2:2014-C01 | Industrial Sewing Machine Installation describes the competencies required to assemble parts and components of various types of new industrial sewing machines according to industrial sewing machine manual installation instructions. The various types of industrial sewing machines include Lockstitch, Overlock, Interlock, Button Hole, Zig Zag, Bartack, Buttoning, Snap Button And Chainstitch Sewing Machine.<br><br>The person who is competent in this CU shall be able to assemble table top and table stand, control box and accessories, machine head and machine accessories using common and special hand tools | 1. Prepare installation tools, equipment and materials | 1.1 Industrial sewing machine installation work requirements identified according to job instruction and industrial sewing machine manual instructions<br>1.2 Industrial sewing machine components unpacked in an organised manner according to standard operating procedures<br>1.3 Tools, equipment and materials selected according to type of industrial sewing machine to be assembled<br>1.4 Barricades and signage prepared according to workplace procedures<br>1.5 Preparation of tools, equipment and materials adhered to health, safety |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | as well as other required materials.<br><br>The outcome of this competency is safe and efficient installation of new industrial sewing machines in compliance with industrial sewing machine manual installation instructions, workplace procedures and Heath, Safety and Environment requirements. | | and environment requirements |
| | | | 2. Assemble table stand and table top | 2.1 Industrial sewing machine table stand components fixed according to industrial sewing machine manual instructions<br>2.2 Industrial sewing machine table top components fixed according to industrial sewing machine manual instructions<br>2.3 Assembled table stand affixed to the assembled table top according to industrial sewing machine manual instructions<br>2.4 Tools used in a safe and effective manner<br>2.5 Installation of table stand and table top adhered to health, safety and environment requirements |
| | | | 3. Assemble control box and accessories | 3.1 Control box assembled according to industrial sewing machine manual instructions<br>3.2 Industrial sewing machine control box affixed to industrial sewing machine according to industrial sewing machine manual |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | instructions<br>3.3 Industrial sewing machine control box accessories installed according to industrial sewing machine manual instructions<br>3.4 Tools used in a safe and effective manner<br>3.5 Installation of industrial sewing machine control box and accessories adhered to health, safety and environment requirements |
| | | | 4. Assemble machine head | 4.1 Industrial sewing machine head mounted to the industrial sewing machine table according to industrial sewing machine manual instructions<br>4.2 Tools used in a safe and effective manner<br>4.3 Installation of industrial sewing machine head adhered to health, safety and environment requirements |
| | | | 5. Assemble machine accessories | 5.1 Industrial sewing machine accessories assembled according to industrial sewing machine manual instructions<br>5.2 Housekeeping practiced according to Standard |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | Operating Procedures<br>5.3 Tools used in a safe and effective manner<br>5.4 Installation of industrial sewing machine accessories adhered to health, safety and environment requirements |
| | | | 6. Complete industrial sewing machine installation records | 6.1 Industrial sewing machine installation work recorded accurately according to required format<br>6.2 Incomplete set of industrial sewing machines or abnormalities recorded and reported for further action<br>6.3 Industrial sewing machine installation records compiled and submitted in a timely manner<br>6.4 Industrial sewing machine installation completed within allocated timeline |
| 2. Industrial Sewing Machine Pre-Operating Set-Up | TA-014-2:2014-C02 | Industrial Sewing Machine Pre-Operating Set-Up describes the competencies required to set up various types of newly assembled industrial sewing machines according to corresponding industrial sewing machine manual specifications.<br><br>The person who is competent in this CU shall be able to lubricate | 1. Prepare industrial sewing machine setup tools, equipment and materials | 1.1 Industrial sewing machine set-up requirements determined according to corresponding industrial sewing machine manual specifications<br>1.2 Tools, equipment and materials selected according to type of industrial sewing machine to be set up |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | industrial sewing machine, assemble power supply plug, install needle and thread on the industrial sewing machine, install bobbin and bobbin case, set control box and adjust air regulator using common and special hand tools as well as other required materials<br><br>The outcome of this competency is effective and safe set-up of newly assembled industrial sewing machines ready for to be used for production according to industrial sewing machine manual specifications, workplace procedures and Heath, Safety and Environment requirements. | | 1.3 Barricades and signage prepared according to workplace procedures<br>1.4 Preparation of tools, equipment and materials adhered to health, safety and environment requirements |
| | | | 2. Lubricate industrial sewing machine | 2.1 Types of lubrication oil selected according to industrial sewing machine specifications<br>2.2 Industrial sewing machine oiled according to industrial sewing machine manual instructions<br>2.3 Lubrication of industrial sewing machine adhered to health, safety and environment requirements |
| | | | 3. Assemble power supply plug | 3.1 Power supply plug fixed according to power supply installation instructions<br>3.2 Continuity test performed according to testing procedures<br>3.3 Tools used in a safe and effective manner<br>3.4 Installation of power supply plug and continuity test executed in compliance with health, safety and environment requirements |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | 4. Install needle and thread on the industrial sewing machine | 4.1 Needle installed according to industrial sewing machine specifications and production order form<br>4.2 Needle threaded and tension set according to industrial sewing machine specifications and production order form<br>4.3 Tools used in a safe and effective manner<br>4.4 Installation of needle and threads adhered to health, safety and environment requirements |
| | | | 5. Install bobbin and bobbin case | 5.1 Bobbin winded with thread according to industrial sewing machine manual instructions<br>5.2 Bobbin case fastened to industrial sewing machine according to industrial sewing machine manual instructions<br>5.3 Tools used in a safe and effective manner<br>5.4 Installation of bobbin and bobbin case adhered to health, safety and environment requirements |
| | | | 6. Set control box | 6.1 Control box set up to required performance |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | according to industrial sewing machine performance specification<br>6.2 Tools used in a safe and effective manner<br>6.3 Control box set-up adhered to health, safety and environment requirements |
| | | | 7. Adjust air regulator | 7.1 Air pressure set according to industrial sewing machine specifications<br>7.2 Industrial sewing machine applications tested to ensure accurate air supply<br>7.3 Tools used in a safe and effective manner<br>7.4 Adjustment of air regulator adhered to health, safety and environment requirements |
| | | | 8. Complete industrial sewing machine pre-operating set-up records | **8.1** Industrial sewing machine pre-operating set up recorded accurately according to required format<br>**8.2** Non-functioning industrial sewing machines recorded and reported for further action<br>**8.3** Industrial sewing machine pre-operating set up records compiled and submitted in a timely manner<br>**8.4** Industrial sewing machine |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | pre-operating set-up completed within allocated timeline |
| 3. Industrial Sewing Machine Production Set-Up | TA-014-2:2014-C03 | Industrial Sewing Machine Production Set-Up describes the competencies required to set up existing industrial sewing machines according to production order requirements<br><br>The person who is competent in this CU shall be able to prepare industrial sewing machines for set-up, prepare industrial sewing machine set-up tools, equipment and materials, adjust industrial sewing machine according to order form requirements and set industrial sewing machine programme based on production requirements.<br><br>The outcome of this competency is effective and efficient se-up of industrial sewing machine for production according to production order requirements, workplace procedures and Heath, Safety and Environment requirements | 1. Prepare industrial sewing machines for production set-up<br><br>2. Prepare industrial sewing machine set-up tools, equipment and materials | 1.1 Types and quantity of industrial sewing machines for set-up determined according to production order and work instructions<br>1.2 Industrial sewing machines required for set-up arranged in an organised manner according to production requirements<br>1.3 Unutilised industrial sewing machines stored at designated storage area according to standard operating procedures (SOP)<br>1.4 Housekeeping practised according to standard operating procedures<br>1.5 Preparation of industrial sewing machines for production set-up adhered to health, safety and environment requirements<br><br>2.1 Set-up requirements determined according to corresponding industrial sewing machine manual specifications<br>2.2 Tools, equipment and materials selected according to type of |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | industrial sewing machine to be set up<br>2.3 Barricades and signage prepared according to workplace procedures<br>2.4 Preparation of tools, equipment and materials adhered to health, safety and environment requirements |
| | | | 3. Adjust industrial sewing machine settings | 3.1 Industrial sewing machine settings (including fixing of attachments, stitch density and machine speed) adjusted according to industrial sewing machine specifications and production order requirements<br>3.2 Tools used in a safe and effective manner<br>3.3 Industrial sewing machine adjustment adhered to health, safety and environment requirements |
| | | | 4. Set industrial sewing machine programme | 4.1 Industrial sewing machine programme setting adjusted according to industrial sewing machine manual and production order requirements<br>4.2 Tools used in a safe and effective manner |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | 4.3 Industrial sewing machine programme setting adhered to health, safety and environment requirements |
| | | | 5. Test run industrial sewing machine performance | 5.1 Industrial sewing machine operated to produce sewn sample according to machine manual instructions<br>5.2 Sewn sample checked to confirm stitch formation according to production order requirements<br>5.3 Tools used in a safe and effective manner<br>5.4 Industrial sewing machine production set-up test run adhered to health, safety and environment |
| | | | 6. Complete industrial sewing machine production set up records | 6.1 Industrial sewing machine production set- up recorded accurately according to required format<br>6.2 Non-functioning industrial sewing machines recorded and reported for further action<br>6.3 Industrial sewing machine production set-up compiled and submitted in a timely manner<br>6.4 Industrial sewing machine production set-up |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | completed within allocated time line |
| 4. Industrial Sewing Machine Attachment and Work Aids Making | TA-014-2:2014-C04 | Industrial Sewing Machine Attachment and Work Aids Making describes the competencies required to produce attachments and work aids according to style requirements.<br><br>Attachments and work aids are labour-saving devices used to simplify operations, reduce handling, increase productivity, improve work quality and reduce operator fatigue. Attachments and work aids are developed to facilitate the use of industrial sewing machine to make it more adaptable to specific operations to meet the demands of frequent changes in style features and production methods.<br><br>The person who is competent in this CU shall be able to prepare attachment and work aids layout, prepare tools, equipment and materials for making attachments and work aids, make industrial sewing machine attachment and work aids, and | 1. Prepare attachment and work aids layout<br><br>2. Prepare tools, equipment and materials for making attachment and work aids<br><br>3. Make industrial sewing machine attachment and work aids | 1.1 Types of attachment and work aids required determined according to style requirements<br>1.2 Template made using master templates selected according to style requirements<br>1.3 Attachment and work aids layout preparation adhered to health, safety and environment requirements<br><br>2.1 Tools, equipment and materials selected according to type of attachment to be made<br>2.2 Barricades and signage prepared according to workplace procedures<br>2.3 Preparation of tools, equipment and materials adhered to health, safety and environment (Heath, Safety and Environment) requirements<br><br>3.1 Attachment and work aids bench work operations (cutting, drilling, finishing, |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | test attachments and work aids performance.<br><br>The outcome of this competency is to enhance the industrial sewing machine's adaptability to specific operations required by different style and production requirements and to ensure quality consistency in the output apparel. | | tapping, forming, soldering) performed efficiently with minimal wastage according to industry practices<br>3.2 Industrial sewing machine attachments and work aids made according to style requirements<br>3.3 Tools used in a safe and effective manner<br>3.4 Industrial sewing machine attachment and work aids making adhered to health, safety and environment requirements |
| | | | 4. Test attachments and work aids performance | 4.1 Attachments and work aids affixed to industrial sewing machine according to industrial sewing machine manual instructions<br>4.2 Test run on attachments and work aids performance carried out according to industrial sewing machine manual instructions<br>4.3 Errors or defects on attachments and work aids corrected to comply with style requirements<br>4.4 Tools used in a safe and effective manner<br>4.5 Test run adhered to health, safety and environment requirements |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | 5. Complete industrial sewing machine attachment and work aids making records. | 5.1 Industrial sewing machine attachment and work aids making recorded accurately according to required format<br>5.2 Industrial sewing machine attachment and work aids making report compiled and submitted in a timely manner<br>5.3 Industrial sewing machine attachment and work aids making completed within allocated timeline |
| 5. Industrial Sewing Machine Scheduled Maintenance | TA-014-2:2014-C05 | Industrial Sewing Machine Scheduled Maintenance describes the competencies required to perform routine preventive maintenance on industrial sewing machine according to machine manual instructions and Standard Operating Procedures. Scheduled maintenance can be performed either on a daily, weekly or monthly basis depending on workplace maintenance procedures and sewing manual specifications.<br><br>The person who is competent in this CU shall be able to identify scheduled maintenance requirements, prepare industrial sewing machine scheduled maintenance tools, equipment | 1. Identify scheduled maintenance requirements<br><br>2. Prepare industrial sewing machine scheduled maintenance tools, equipment and materials | 1.1 Type, quantity and location of industrial sewing machines for scheduled maintenance determined according to industrial sewing machine maintenance schedule and work instructions<br>1.2 Time and duration for maintenance determined according to industrial sewing machine maintenance schedule<br>1.3 Industrial sewing machine scheduled maintenance job tasks determined according to maintenance checklist<br><br>2.1 Tools, equipment and materials selected according to type of industrial sewing machine to |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | and materials, upkeep industrial sewing machine physical condition, service machine electrical and electronic system, mechanical system and pneumatic system, handle idle industrial sewing machines and update scheduled maintenance records.<br><br>The outcome of this competency is effective and efficient maintenance of industrial sewing machines according to machine manual instructions and standard operating procedures. Proper preventive scheduled maintenance enhances the durability and life span of the industrial sewing machines. | | be maintained<br>2.2 Barricades and signage prepared according to workplace procedures<br>2.1 Industrial sewing machine scheduled maintenance tools, equipment and material preparation adhered to health, safety and environment requirements |
| | | | 3. Upkeep industrial sewing machine physical condition | 3.1 Industrial sewing machine physical condition checked and restored according to standard operating procedures<br>3.2 Tools used in a safe and effective manner<br>3.3 Industrial sewing machine physical condition upkeep adhered to health, safety and environment requirements |
| | | | 4. Service electrical and electronic system | 4.1 Electrical and electronic system cleaned according to standard operating procedures<br>4.2 Electrical and electronic system repaired according to industrial sewing machine manual instructions<br>4.3 Electrical and electronic system components |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | replaced according to industrial sewing machine manual instructions<br>4.4 Tools used in a safe and effective manner<br>4.5 Electrical and electronic system servicing adhered to health, safety and environment requirement |
| | | | 5. Service mechanical system (trimming mechanism, feeding mechanism, lubrication system, threading mechanism, driving mechanism) | 5.1 Mechanical system cleaned according to standard operating procedures<br>5.2 Mechanical system repaired according to industrial sewing machine manual instructions<br>5.3 Mechanical system components replaced according to industrial sewing machine manual instructions<br>5.4 Tools used in a safe and effective manner<br>5.5 Mechanical system servicing adhered to health, safety and environment requirements |
| | | | 6. Service pneumatic system | 6.1 Pneumatic system cleaned according to standard operating procedures<br>6.2 Pneumatic system repaired according to industrial sewing machine manual |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | instructions<br>6.3 Pneumatic system components replaced according to industrial sewing machine manual instructions<br>6.4 Tools used in a safe and effective manner<br>6.5 Pneumatic system servicing adhered to health, safety and environment requirements. |
| | | | 7. Handle idle industrial sewing machines | 7.1 Unutilised industrial sewing machines cleaned, tied and covered according to machine manual instructions<br>7.2 Unutilised industrial sewing machines details recorded according to workplace procedures<br>7.3 Unutilised industrial sewing machines transferred and stored at designated areas according to workplace procedures<br>7.4 Tools and lifting equipment used in a safe and effective manner<br>7.5 Handling of idle industrial sewing machines carried out in compliance with health, safety and environment requirements |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | 8. Update industrial sewing scheduled maintenance records | 8.1 Industrial sewing machine scheduled maintenance recorded accurately according to required format<br>8.2 Non-functioning industrial sewing machines recorded and reported for further action<br>8.3 Industrial sewing machine schedule maintenance report compiled and submitted in a timely manner<br>8.4 Industrial sewing machine scheduled maintenance completed within allocated timeline |
| 6. Industrial Sewing Machine Repair | TA-014-2:2014-C06 | Industrial Sewing Machine Repair describes the competencies required to repair faulty or malfunctioned industrial sewing machines according to industrial sewing machine manual troubleshooting guidelines and Standard Operating Procedure.<br><br>The person who is competent in this CU shall be able to diagnose industrial sewing machine malfunction, prepare industrial sewing machine repair tools, equipment and materials, rectify faulty electrical and | 1. Determine industrial sewing machine malfunction | 1.1 Industrial sewing machine break down information and maintenance records interpreted to assist in determining actual malfunction<br>1.2 Visual observation and testing performed to identify machine malfunction and faulty components according to industrial sewing machine manual troubleshooting guidelines<br>1.3 Causes of industrial sewing machine malfunction identified according to industrial sewing machine |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | electronic system, mechanical system rectify pneumatic system, test repaired machine performance and update repair records.<br><br>The outcome of this competency is efficient and effective restoration of malfunctioned industrial sewing machines.to normal operating performance in compliance with machine manual instructions, workplace procedures and Heath, Safety and Environment requirements, | | manual troubleshooting guidelines<br>1.4 Type of repair work determined according to industrial sewing machine manual troubleshooting guidelines |
| | | | 2. Prepare industrial sewing machine repair tools, equipment and materials | 2.1 Tools, equipment and materials selected according to type of industrial sewing machine to be repaired and type of repair work<br>2.2 Barricades and signage prepared according to workplace procedures<br>2.3 Industrial sewing machine repair tools, equipment and materials preparation adhered to health, safety and environment requirements |
| | | | 3. Rectify faulty electrical and electronic system | 3.1 Faulty electrical and electric component replaced according to industrial sewing machine manual instructions<br>3.2 Faulty electrical and electric components repaired according to industrial sewing machine manual instructions<br>3.3 Electrical and electric |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | component adjusted according to industrial sewing machine manual instructions<br>3.4 Tools used in a safe and effective manner<br>3.5 Electrical and electronic system repair work adhered to health, safety and environment requirements |
| | | | 4. Rectify faulty mechanical system | 4.1 Faulty mechanical components replaced according to industrial sewing machine manual instructions<br>4.2 Faulty mechanical components repaired according to industrial sewing machine manual instructions<br>4.3 Mechanical components adjusted according to industrial sewing machine manual instructions<br>4.4 Mechanical system repair work adhered to health, safety and environment requirements |
| | | | 5. Rectify faulty pneumatic system | 5.1 Faulty pneumatic components replaced according to industrial sewing machine manual instructions |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | 5.2 Faulty pneumatic components repaired according to industrial sewing machine manual instructions<br>5.3 Pneumatic system adjusted according to industrial sewing machine manual instructions<br>5.4 Pneumatic system repaired according health, safety and environment requirements |
| | | | 6. Test repaired industrial sewing machine performance | 6.1 Industrial sewing machine operated according to machine manual instructions<br>6.2 Industrial sewing machine performance tested in comparison with standard performance<br>6.3 Tools used in a safe and effective manner<br>6.4 Industrial sewing machine performance test adhered to health, safety and environment |
| | | | 7. Update industrial sewing machine repair records | 7.1 Industrial sewing machine repair work recorded accurately according to required format<br>7.2 Non-functioning industrial sewing machines recorded and reported for further |

| CU Title | CU Code | CU Descriptor | CU Work Activities | Performance Criteria |
|---|---|---|---|---|
| | | | | action<br>7.3 Industrial sewing machine repair records compiled and submitted in a timely manner<br>7.4 Industrial sewing machine repair work completed within allocated timeline |

## CURRICULUM of COMPETENCY UNIT (CoCU)

| SECTOR | TEXTILE AND APPAREL |
|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE INSTALLATION** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to assemble the components and accessories of an industrial sewing machine according to the machine manual instructions and in compliance with Heath, Safety and Environment requirements.<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Prepare installation tools, equipment and materials<br>• Assemble table stand and top<br>• Assemble control box and tools<br>• Assemble machine head<br>• Assemble machine accessories<br>• Complete industrial sewing machine installation records | | | | | | |
| **PRE-REQUISITE (if applicable)** | NA | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C01 | **LEVEL** | 2 | **TRAINING DURATION** | 70 hours | **SKILL CREDIT** | 7 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Prepare installation tools, equipment and materials | i. Types, characteristics and features of industrial sewing machines such as<br>• Lockstitch<br>• Overlock<br>• Interlock<br>• Button hole<br>• Bartack<br>• Zig zag | i. Identify type of industrial sewing machine to be installed<br>ii. Interpret relevant information in industrial sewing machine instruction manuals.<br>iii. Select installation | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br><br>*Safety:* | Related Knowledge<br><br>5<br><br>Related | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills | i. Types, characteristic and features of industrial sewing machines listed<br>ii. Type of industrial sewing |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Buttoning<br>• Snap Button<br>• Chainstitch<br>ii. Types of industrial sewing machine bed types such as<br>• Flat bed<br>• Cylinder bed<br>• Post bed<br>• Raised bed<br>iii. Industrial sewing machine parts, components and accessories<br>• Accessories (such as thread stand, table and table stand, drawer)<br>• Mechanical Components (such as machine head, belt, bobbin winder)<br>• Pneumatic components (such as cylinder valve, air regulator, solenoid valve)<br>• Electrical and electronic component (such as Servo Motor/Clutch Motor/Induction Motor, control | tools, equipment and materials<br>iv. Arrange installation tools, equipment and materials | Use tools in a safe manner<br>Wear PPE at all times<br>Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Skills<br><br>10 | Demonstration<br>Project-based Learning | machine to be installed confirmed according to work instruction<br>iii. Installation procedures and other relevant information retrieved from industrial sewing machine manual<br>iv. Installation tools, equipment and materials selected and handled in a safe manner<br>v. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | panel)<br>iv. Installation procedure and sequence<br>v. Installation tools, equipment and materials<br>• Common hand tools<br>• Hand drill<br>• Testing equipment (such as Multi meter, test pen, test lamp)<br>• Connectors (such as cable tie, cable clip)<br>• Mounting rubber<br>vi. Heath, Safety and Environment requirements<br>• PPE (gloves, mask, safety boots, goggles, earplug)<br>• Workplace and personal safety<br>• Housekeeping | | | | | |
| 2. Assemble table stand and top | i. Types of table stands<br>• Z stand<br>• H stand<br>ii. Types of table tops<br>• Plywood<br>• Laminated<br>• Solid wood | i. Unpack industrial sewing machine parts<br>ii. Confirm type and quantity of industrial sewing machine parts based on industrial sewing machine instruction manual | *Attitude*:<br>i. Ensure components are correctly matched with industrial sewing machines<br>ii. Comply with work instructions | Related Knowledge<br>5 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning | i. Types and quantity of industrial sewing machine parts confirmed accurately |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Table stand components<br>• Treadle<br>• Reservoir oil pan<br>iv. Table stand and top assembly procedures | iii. Fix industrial sewing machine table stand components (treadle, reservoir oil pan, etc.)<br>iv. Fix assembled table's stand to industrial sewing machine table | iii. Comply with industrial sewing machine manual instructions<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle industrial sewing machine components safely<br><br>*Environmental:*<br>ι. Practise good housekeeping | Related Skills<br><br>10 | Related Skills<br><br>Demonstration<br>Project-based Learning | ιι. Industrial sewing machine table stand components assembled<br>ιιι. Industrial sewing machine table stand attached to industrial sewing machine table<br>ιϖ. Tools used in a safe manner<br>ϖ. Personal and workplace safety as well as housekeeping practised at all times |
| 3. Assemble control box and accessories | i. Basic electronic and electrical principles<br>• Electronic component<br>• Wiring<br>• Programming<br>• Device setting<br>• Circuit diagram<br>• Schematic Diagram | i. Mount industrial sewing machine motor on industrial sewing machine table.<br>ii. Fix industrial sewing machine control box accessories<br>iii. Fix industrial sewing machine control box to industrial sewing | *Attitude*:<br>i. Ensure components are correctly matched with industrial sewing machines<br>ii. Comply with work instructions<br>iii. Comply with industrial sewing | Related Knowledge<br><br>5<br><br>Related | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills | i. Industrial sewing machine motor mounted on industrial sewing machine table<br>ii. Industrial |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | ii. Types of control box components<br>• Control panel<br>• Control touch screen<br>• Input panel (such as USB, EP ROM)<br>• Speed control unit<br>iii. Types of control box accessories<br>• Cable and plug<br>• Media input (such as stitching software)<br>iv. Types of motor<br>• Servo motor<br>• Clutch motor<br>• Induction motor<br>v. Control box specification and functions<br>vi. Motor installation procedures for various type of industrial sewing machine<br>vii. Control box and accessories assembly procedures for various type of industrial sewing machine | machine motor<br>iv. Assemble power switch box to industrial sewing machine table | machine manual instructions<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | Skills<br><br>10 | Demonstration<br>Project-based Learning | sewing machine control box accessories fixed<br>iii. Industrial sewing machine control box fixed to industrial sewing machine motor<br>iv. Power switch box assembled on industrial sewing machine table<br>v. Personal and workplace safety as well as good housekeeping practised at all times |
| 4. Assemble machine head | i. Types of machine bed<br>• Flat bed<br>• Cylinder bed | i. Install mounting rubber.<br>ii. Mount industrial | *Attitude*:<br>i. Ensure components are correctly | Related Knowledge | Related Knowledge | i. Mounting rubber installed on |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Post bed<br>• Feed of arm bed<br>• Raised bed<br>ii. Machine head assembling procedures for different types of industrial sewing machine<br>iii. Technique for attaching cable to servo motor | sewing machine head to the industrial sewing machine table.<br>iii. Attach cable from servo motor to machine head. | matched with industrial sewing machines<br>ii. Comply with work instructions<br>iii. Comply with industrial sewing machine manual instructions<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>**i.** Use tools in a safe manner<br>**ii.** Wear PPE at all times<br>**iii.** Maintain workplace safety<br>**iv.** Work in pairs when assembling machine head (to avoid injury/ accidents)<br><br>*Environmental:*<br>i. Practise good housekeeping | 3<br><br>Related Skills<br><br>7 | Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | machine head<br>ii. Machine head mounted on to industrial sewing machine table<br>iii. Cable attached from servo motor to machine head<br>iv. Personal and workplace safety as well as good housekeeping practised at all times |
| 5. Assemble machine accessories | i. Type of industrial sewing machine accessories<br>• Hand pulley<br>• Synchronizer | i. Install synchroniser to machine hand pulley.<br>ii. Fix bobbin thread winder to industrial sewing machine table. | *Attitude*:<br>i. Ensure accessories are correctly matched with industrial sewing | Related Knowledge<br><br>3 | Related Knowledge<br><br>Lecture<br>Discussion | i. Synchroniser installed on machine hand pulley<br>ii. Bobbin |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Bobbin thread winder<br>• Motor cover<br>• Belt cover<br>• Thread stand<br>ii. Machine accessories assembling procedures for different type of industrial sewing machine. | iii. Fix industrial sewing machine thread stand to industrial sewing machine table.<br>iv. Fix motor cover on industrial sewing machine motor.<br>v. Fix belt cover on industrial sewing machine head.<br>. | machines<br>ii. Comply with work instructions<br>iii. Comply with industrial sewing machine manual instructions<br>iv. Work conscientiously within allocated time<br><br><u>*Safety:*</u><br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle machine accessories in a safe manner<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | <u>Related Skills</u><br><br>7 | Problem-based Learning<br><br><u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | thread winder fixed on to industrial sewing machine table<br>iii. Thread stand assembled on industrial sewing machine table<br>iv. Motor cover fixed on industrial sewing machine motor<br>v. Belt cover fixed on industrial sewing machine head<br>vi. Personal and workplace safety as well as good housekeeping practised at all times |
| 6. Complete industrial sewing machine installation | i. Industrial sewing machine installation record format. | i. Determine required details of assembled industrial sewing machines to be | <u>*Attitude*</u>:<br>i. Comply with work instructions<br>ii. Comply with | <u>Related Knowledge</u><br><br>1 | <u>Related Knowledge</u><br><br>Lecture | i. Industrial sewing machine accurately |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| records. | ii. Industrial sewing machine installation record contents.<br>• ype of machine<br>• erial number<br>• odel<br>• ndustrial sewing machine accessories<br>• ocation | recorded<br>ii. Record details of assembled industrial sewing machines in required format<br>iii. Submit records for verification | industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Accurate, thorough and timely in maintaining records<br><br>*Safety:*<br>ı. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>4 | Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | and completely assembled according to manual instructions<br>ii. Assembled industrial sewing machine details confirmed and recorded<br>iii. Details recorded according to required format<br>iv. Industrial sewing machine installation completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|

| | |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information.<br>01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.07 Utilise Local Area Network (LAN)/ Intranet to exchange information<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM : Trainees) |
|---|---|
| 1. Industrial Sewing Machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |
| • Button hole | 1:25 |
| • Zig zag | 1:5 |
| • Bartack | 1:25 |
| • Buttoning | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Industrial Sewing Machines Parts (Needle, needle plate, bobbin, bobbin case, rotary hook, looper, presser foot, belt, upper knife, lower knife, feed dog, cutter, bearing, pulley, nuts, needle holder screws) | As required |
| 3. Hand tools (set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, toolbox, lock, hammer, set of wrenches, oil pan, oil can, vice) | 1:1 |
| 4. Special tools | |
| • Bearing puller | 1:5 |
| • Torchlight | 1: 1 |
| • Magnet pen | 1:1 |
| • Machinist ruler | 1:1 |
| • Timing gauge | 1:5 |
| • Needle gauge | 1:5 |
| • Tension gauge | 1:5 |
| • Vernier calliper | 1:5 |
| • Multimeter | 1:5 |
| • Test Lamp | 1:5 |

| | |
|---|---|
| • Saw<br>5. PPE (Mask, goggles, apron, gloves, safety shoes, ear plug)<br>6. Installation checklist | 1:5<br>1:1<br>1:1 |

**REFERENCES**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2. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 2: Sewing Machine Assembly
3. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 3: Sewing Machine Set-Up
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7. Cheng C.Y.; Yip S.F. .Introduction to Garment Manufacture (Vol 1, 2, 3, 4). Institute of Textiles and Clothing, Programme Development Series, Educational Development Unit, The Hong Kong Polytechnic Uni.
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# CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE PRE-OPERATING SET-UP** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to set up newly assembled industrial sewing machines to function at standard performance according to machine manual specifications.<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Prepare industrial sewing machine set-up tools, equipment and materials<br>• Lubricate industrial sewing machine<br>• Assemble power supply plug<br>• Install needle and thread<br>• Install bobbin and bobbin case<br>• Set control box<br>• Adjust air filter<br>• Complete industrial sewing machine pre-operating set-up records | | | | | | |
| **PRE-REQUISITE (if applicable)** | Industrial Sewing Machine Installation | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C02 | **LEVEL** | 2 | **TRAINING DURATION** | 120 hours | **SKILL CREDIT** | 12 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Prepare industrial sewing machine setup tools, equipment and | i. Types, features and characteristics of industrial sewing machines such as<br>• Lockstitch<br>• Overlock | i. Identify type of industrial sewing machine<br>ii. Extract relevant information from industrial sewing | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual | Related Knowledge<br><br>5 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based | i. Type of industrial sewing machine to be set up confirmed |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| materials | • Interlock<br>• Button hole<br>• Bartack<br>• Zig zag<br>• Buttoning<br>• Snap Button<br>• Chainstitch<br>ii. Industrial sewing machine parts, components and accessories<br>• Accessories (such as thread stand, table and table stand, drawer)<br>• Mechanical Components (such as machine head, belt, bobbin winder)<br>• Pneumatic components (such as cylinder valve, air regulator, solenoid valve)<br>• Electrical and electronic component (such as Servo Motor/Clutch Motor/Induction Motor, control panel) | machine instruction manuals<br>iii. Select tools, equipment and materials to install industrial sewing machine<br>iv. Select PPE (Personal Protective Equipment)<br>v. Check workplace safety. | instructions<br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br>10 | Learning Related Skills<br>Demonstration<br>Project-based Learning | according to work instruction<br>ii. Pre-operating set-up procedures and other relevant information retrieved from industrial sewing machine manual<br>iii. Set-up tools, equipment and materials selected and handled in a safe manner<br>iv. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Pre-operating setup procedure and sequence<br>iv. Pre-operating setup tools, equipment and materials<br>• Common hand tools<br>• Testing equipment (such as Multi meter, test pen, test lamp)<br>• Lubricating oil<br>• Material/fabric<br>• Measuring tools (such as ruler, tension meter)<br>v. Heath, Safety and Environment requirements<br>• PPE (gloves, mask, safety boots, goggles, earplug, apron)<br>• Workplace and personal safety<br>• Housekeeping | | | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 2. Lubricate industrial sewing machine. | i. Types of industrial sewing machine lubrication oil such as<br>• SM 22<br>• SF 68<br>• 18<br>• 15<br>ii. Industrial sewing machine lubrication capacity<br>iii. Industrial sewing machine lubrication components (such as oil filter, oil pan, felt, oil pump, piping)<br>iv. Industrial sewing machine lubrication procedures, methods and techniques for machine with/without lubrication system.<br>v. Lubrication system functionality test.<br>vi. Used oil disposal procedures | i. Select type of lubrication oil.<br>ii. Fill the oil pan with the selected oil.<br>iii. Fill the required quantity of lubrication oil<br>iv. Test lubrication system functionality<br>v. Lubricate industrial sewing machine parts and components manually (for machine without lubrication system)<br>vi. Dispose used oil in compliance with Heath, Safety and Environment requirements | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping<br>ii. Dispose used oil according to Heath, Safety and Environment requirements | Related Knowledge<br><br>10<br><br>Related Skills<br><br>20 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Type of lubrication oil selected according to requirement<br>ii. Oil plan filled with required quantity of lubrication oil<br>iii. Lubrication system functionality confirmed<br>iv. Lubrication performed manually, if applicable<br>v. Used lubrication oil disposed in compliance with Heath, Safety and Environment requirements<br>vi. Personal and workplace safety as well as good housekeeping practised at all times |
| 3. Assemble power supply | i. Basic wiring principles.<br>ii. Three pin plug | i. Determine wires based on their functionalities | *Attitude*:<br>i. Comply with work | Related Knowledge | Related Knowledge | i. Earth, neutral and live |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| plug. | structure.<br>iii. Types of fuse (such as 15A, 13A)<br>iv. Power supply plug assembling procedures.<br>v. Continuity test. | (earth, neutral and live).<br>ii. Fix wires to three pin plug.<br>iii. Fix fuse to three pin plug.<br>iv. Perform continuity test.<br>v. Plug and on power source.<br>vi. Off the power source and unplug. | instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br><u>*Safety:*</u><br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical components safely<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | 1<br><br><u>Related Skills</u><br><br>4 | Lecture<br>Discussion<br>Problem-based Learning<br><br><u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | Wires correctly fixed to three pin plug<br>ii. Fuse installed correctly on to three pin plug<br>iii. Continuity test performed<br>iv. Power supply plug functionality confirmed<br>v. Personal and workplace safety as well as good housekeeping practised at all times |
| 4. Install needle and thread on the industrial sewing machine | i. Types of needles (such as DB (lockstitch), DC (overlock), UO (chainstitch), UY (interlock), DP (button hole, zig zag, bartack), TQ (buttoning))<br>ii. Sizes of needles (such as 8, 9, 10, 11, 12, 13) | i. Select the needle and thread.<br>ii. Loosen screw at needle holder.<br>iii. Fix needle to needle holder.<br>iv. Tighten screw at needle holder.<br>v. Fix thread into the needle eyes. | <u>*Attitude*</u>:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><u>*Safety:*</u><br>i. Use tools in a safe | <u>Related Knowledge</u><br><br>5<br><br><u>Related Skills</u> | <u>Related Knowledge</u><br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br><u>Related Skills</u> | i. Needle and thread selected according to work instructions<br>ii. Needle securely fixed on needle holder according to manual |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Types and applications of needles points<br>• Round point sharp tip<br>• Round point ball tip<br>• Stay point<br>• Rocked point<br>• Flat point<br>• Spear point<br>• Square point<br>• Reversed twist rocked point<br>iv. Types of thread<br>• Z twist<br>• S twist<br>v. Yarn count of thread<br>• 180, 160, 140, 120, 80, 50, 30,<br>vi. Selection criteria for needles type, size and point<br>• Type and yarn count of thread<br>• Type of fabric<br>• Fabric thickness<br>• Fabric handle<br>vii. Needle installation procedures, methods and techniques for various types of industrial sewing machine<br>viii. Threading mechanism | | manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | 10 | Demonstration<br>Project-based Learning | instructions<br>iii. Thread fixed into the needle eye<br>iv. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | procedures, methods and techniques for various types of industrial sewing machine | | | | | |
| 5. Install bobbin and bobbin case | i. Types of bobbin and bobbin case according to type of industrial sewing machine.<br>ii. Bobbin and bobbin case installation procedures, methods and techniques<br>iii. Thread tension test.<br>iv. Direction of bobbin case rotation. | i. Wind the thread onto the bobbin.<br>ii. Place the bobbin into bobbin winder.<br>iii. Adjust winder tension.<br>iv. Place bobbin into the bobbin case.<br>v. Test thread tension using test tension gauge<br>vi. Check bobbin case rotation (clockwise).<br>vii. Fixed bobbin case onto rotary hook. | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping. | Related Knowledge<br><br>4<br><br>Related Skills<br><br>8 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Thread wound onto bobbin<br>ii. Bobbin placed into bobbin winder<br>iii. Winder tension adjusted<br>iv. Bobbin placed into bobbin case<br>v. Thread tension tested and confirmed using test tension gauge<br>vi. Bobbin case checked to ensure correct rotation direction<br>vii. Bobbin case fixed onto rotary hook<br>viii. Personal and |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | | | | workplace safety as well as good housekeeping practised at all times |
| 6. Set control box | i. Key functions of panel in the control box<br>ii. Setting parameter (such as needle position, industrial sewing machine speed, start/end back tacking)<br>iii. Industrial sewing machine speed specification on various types of industrial sewing machine and material<br>iv. Functions controlled by control box (such as trimmer, presser foot, wiper, needle stop position)<br>v. Control box setting procedures. | i. Adjust control box setting to required industrial sewing machine speed.<br>ii. Check machine performance such as stitches, speed, etc. based on type of industrial sewing machine<br>iii. Check machine system functionality<br>iv. Report non-functional industrial sewing machine for further action | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>ι. Use tools in a safe manner<br>ιι. Wear PPE at all times<br>ιιι. Maintain workplace safety<br>ιϖ. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Knowledge<br><br>6<br><br>Related Skills<br><br>20 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Required industrial sewing machine speed adjusted<br>ii. Industrial sewing machine set to perform at standard performance<br>iii. Industrial sewing machine system functionality confirmed<br>iv. Non-functional industrial sewing machine recorded and reported<br>v. Personal and workplace safety as well as good |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | | | | housekeeping practised at all times |
| 7. Adjust pneumatic system | i. Functions of pneumatic system<br>ii. Components of pneumatic system<br>• Air regulator,<br>• Solenoid valve<br>• Air cylinder<br>• Speed controller<br>• Air fitting<br>• Air filter<br>iii. Power fluid transmission<br>iv. Measurement unit for air pressure (pascal, bar) | i. Check flow of air supply to pneumatic system components<br>ii. Set air pressure according to the machine specifications.<br>iii. Test industrial sewing machine application. to ensure accurate air pressure supply.<br>iv. Test pneumatic mechanism functionality | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Knowledge<br>3<br><br>Related Skills<br>8 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br>Demonstration<br>Project-based Learning | i. Flow of air supply to pneumatic components set according to industrial sewing machine specifications<br>ii. Pneumatic system mechanism functionality tested and confirmed<br>iii. Personal and workplace safety as well as good housekeeping practised at all times |
| 8. Complete industrial sewing machine pre-operating set up records. | i. Industrial sewing machine pre-operating setup record format.<br>ii. Industrial sewing machine pre-operating setup | i. Determine required details of newly set-up industrial sewing machines to be recorded<br>ii. Record details of industrial sewing machines in required format | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously | Related Knowledge<br>2 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning | i. Industrial sewing machine accurately and completely set-up according to manual |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | record contents.<br>• ype of machine<br>• erial number<br>• odel<br>• ocation<br>• etup date<br>• perating setup specifications | iii. Submit records for verification. | within allocated time<br>iv. Accurate, thorough and timely in maintaining records<br><br><u>*Safety:*</u><br>i. Wear PPE at all times<br>ii. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | <u>Related Skills</u><br><br>4 | <u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | instructions<br>ii. Newly set-up industrial sewing machine details confirmed and recorded<br>iii. Details recorded according to required format<br>iv. Industrial sewing machine pre-operating set-up completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills |

| | |
|---|---|
| 01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | 6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM: TRAINEES) |
|---|---|
| 1. Industrial Industrial sewing machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |

| | |
|---|---|
| • Button Hole | 1:25 |
| • Zig Zag | 1:5 |
| • Bartack | 1:25 |
| • Buttonning | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Sewing Machine Parts (Needle, needle plate, bobbin, bobbin case, rotary hook, looper, presser foot, belt, upper knife, lower knife, feed dog, cutter, bearing, pulley, nuts, needle holder screws) | As required |
| 3. Hand tools (toolbox, set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, , lock, set of hammers, set of wrenches, vice) | 1: 1 |
| 4. Special Tools | |
| • Bearing puller | 1:5 |
| • Torchlight | 1:1 |
| • Magnet pen | 1:1 |
| • Machinist ruler | 1:1 |
| • Timing gauge | 1:5 |
| • Needle gauge | 1:5 |
| • Multimeter | 1:5 |
| • Test lamp | 1:5 |
| • Saw | 1:5 |
| • Set of mallets | 1:5 |
| 5. PPE (Mask, Goggles, Apron, Gloves, Safety Shoes, Ear Plug) | 1: 1 |
| 6. Lubrication TEM | |
| • Lubrication Oil | As required |
| • Oil Can | 1: 1 |

| | |
|---|---|
| • Oil Pan | 1: 1 |
| 7. Checklist | |
| • Installation checklist | 1:1 |
| • Setup checklist | 1:1 |
| • Wires | As required |
| • Cable tie | As required |
| 8. Computer | 1: 5 |

**REFERENCES**


1. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 1: Introduction
2. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 2: Sewing Machine Assembly
3. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 3: Sewing Machine Set-Up
4. Standard: BS 3870 Part 1: Stitches and seams. Classification and terminology of stitch types. (British Euro standard)
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# CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE PRODUCTION SET-UP** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to set-up industrial sewing machines according to style and production requirements.<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Prepare industrial sewing machines for production set-up<br>• Prepare set-up tools, equipment and materials<br>• Adjust industrial sewing machine settings<br>• Set industrial sewing machine programme<br>• Test run industrial sewing machine performance<br>• Complete industrial sewing machine production set-up records | | | | | | |
| **PRE-REQUISITE (if applicable)** | Industrial Sewing Machine Installation | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C03 | **LEVEL** | 2 | **TRAINING DURATION** | 170 hours | **SKILL CREDIT** | 17 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Prepare industrial sewing machines for set-up | i. Floor layout plan<br>ii. Industrial sewing machine production layout plan<br>iii. Types, characteristics and features of industrial sewing machines such as | i. Interpret floor layout plan.<br>ii. Interpret industrial sewing machine production layout plan.<br>iii. Identify types of industrial sewing machine for production | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions | Related Knowledge<br><br>5 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning | i. Floor layout and industrial sewing machine production layout plan confirmed<br>ii. Types of |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Lockstitch<br>• Overlock<br>• Interlock<br>• Button hole<br>• Bartack<br>• Zig zag<br>• Buttoning<br>• Snap Button<br>• Chainstitch<br>iv. Industrial sewing machine parts, components and accessories<br>• Accessories (such as thread stand, table and table stand, drawer)<br>• Mechanical Components (such as machine head, belt, bobbin winder)<br>• Pneumatic components (such as cylinder valve, air regulator, solenoid valve)<br>• Electrical and electronic component (such as Servo Motor/Clutch Motor/Induction Motor, control | set-up.<br>iv. Store unutilised industrial sewing machine at designated area.<br>v. Place required industrial sewing machine at production line. | *Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>10 | Related Skills<br><br>Demonstration<br>Project-based Learning | industrial sewing machine for production set-up confirmed<br>iii. Unutilised industrial sewing machines stored at designed areas<br>iv. Required industrial sewing machines arranged at production line according to production layout plan<br>v. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | panel)<br>v. Ergonomics in handling industrial sewing machine<br>vi. Industrial sewing machine shifting procedures, methods and techniques<br>vii. Industrial sewing machine storing procedures, methods and techniques<br>viii. Related Health, Safety and Environment requirements<br>• PPE (gloves, mask, safety boots, goggles, earplug, apron)<br>• Workplace safety<br>• Housekeeping | | | | | |
| 2. Prepare industrial sewing machine set-up tools, equipment and materials | i. Production set-up procedure and sequence<br>ii. Production set-up tools, equipment and materials<br>• Common hand tools<br>• Material/fabric<br>• Measuring tools (such as ruler, tension meter)<br>iii. Utilities cable and | i. Interpret industrial sewing machine instruction manual.<br>ii. Interpret production style requirements<br>iii. Select set-up tools, equipment and materials<br>iv. Identify utilities cable and tube<br>v. Identify utilities outlet location<br>vi. Connect utilities cable | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe | Related Knowledge<br><br>5<br><br>Related Skills | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills | i. Production set-up procedures confirmed as per instruction manual<br>ii. Set-up tools, equipment and materials selected and handled in a safe manner |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | tube such as<br>• Electrical cable<br>• Compressed air tube<br>iv. Heath, Safety and Environment requirements<br>• PPE (gloves, mask, safety boots, goggles, earplug, apron)<br>• Workplace safety<br>• Housekeeping<br>v. Industrial sewing machine manuals | and tube<br>vii. Raise spare parts requisition (if applicable)<br>viii. Check workplace safety. | manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | 10 | Demonstration<br>Project-based Learning | iii. Utilities cable and tube connected<br>iv. Spare parts raised if applicable<br>v. Personal and workplace safety as well as good housekeeping practised at all times |
| 3. Adjust industrial sewing machine settings | i. Style requirements based on production order<br>• Measurement and tolerances<br>• Required accessories<br>• Type of material<br>• Finishing instructions<br>ii. Types of fabric (such as cotton, polyester, spandex, rayon) and material (such as button, zip, lace)<br>iii. Types of industrial sewing machine attachment (such as piping folder, taping, binding) | i. Determine style requirements<br>ii. Assemble required attachment and work aids to industrial sewing machine<br>iii. Fix required industrial sewing machine parts<br>iv. Set specified machine timing according to fabric/material.<br>v. Set specified machine speed.<br>vi. Set specified stitches density (stitch per inch)<br>vii. Set specified feeding mechanism<br>viii. Set specified threading mechanism | <u>*Attitude*</u>:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br><u>*Safety:*</u><br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety | <u>Related Knowledge</u><br><br>18<br><br><u>Related Skills</u><br><br>45 | <u>Related Knowledge</u><br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br><u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | i. Style requirements confirmed according to production order<br>ii. Attachment and work aids assembled on to industrial sewing machines as per style requirements<br>iii. Industrial sewing machine parts fixed |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iv. Types of attachment assembly<br>• Fixed assembly<br>• Portable<br>v. Industrial sewing machine attachment procedures, methods and techniques<br>vi. Industrial sewing machine timing mechanism<br>vii. Industrial sewing machine speed specification<br>viii. Industrial sewing machine feeding mechanism<br>ix. Industrial sewing machine threading mechanism<br>x. Stitches density<br>xi. Needle and thread installation procedures, methods and techniques for various types of industrial sewing machine | ix. Install needle and thread | *Environmental:*<br>i. Practise good housekeeping | | | iv. Industrial sewing machine timing and speed set according to style requirements<br>v. Stitch density set<br>vi. Feeding mechanism set<br>vii. Threading mechanism set<br>viii. Needle and thread installed<br>ix. Personal and workplace safety as well as good housekeeping practised at all times |
| 4. Set industrial sewing machine programme | i. Key functions of panel in the control box<br>ii. Industrial sewing machine default setting parameter<br>iii. Parameter setting | i. Interpret control panel menu<br>ii. Reset industrial sewing machine to default setting<br>iii. Set industrial sewing machine required | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions | Related Knowledge<br><br>13 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning | i. Control panel menu identified correctly<br>ii. Industrial sewing machine |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | (such as needle position, industrial sewing machine speed, start/end back tacking)<br>iv. Industrial sewing machine speed specification on various types of industrial sewing machine and material.<br>v. Control box setting procedures. | parameters | iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>26 | Related Skills<br><br>Demonstration<br>Project-based Learning | reset to default setting<br>iii. Industrial sewing machine parameters set according to style requirements<br>iv. Personal and workplace safety as well as good housekeeping practised at all times |
| 5. Conduct test run on industrial sewing machine | i. Style requirements<br>ii. Industrial sewing machine operation<br>iii. Preparation of testing materials.<br>iv. Industrial sewing machine performance testing procedures | i. Prepare testing material<br>ii. Operate industrial sewing machine<br>iii. Determine performance of industrial sewing machine<br>iv. Compare performance of industrial sewing machine with style requirements | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Ensure quality consistency is achieved<br>*Safety:*<br>ı. Use tools in a safe manner<br>ıı. Wear PPE at all | Related Knowledge<br><br>10<br><br>Related Skills<br><br>21 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Production set-up testing material selected and prepared<br>ii. Industrial sewing machine operated according to instruction manual<br>iii. Performance of industrial sewing machine compared |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | times<br>ιιι. Maintain workplace safety<br>ιϖ. Handle electrical and electronic components safely<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | | | and confirmed with style requirements and readjusted if applicable |
| 6. Complete industrial sewing machine production set-up records | i. Industrial sewing machine production set up record format<br>ii. Industrial sewing machine production setup record contents.<br>• ype of machine<br>• erial number<br>• odel<br>• ocation<br>• etup date<br>• roduction setup specifications<br>• uantity | i. Determine required details of industrial sewing machines to be recorded<br>ii. Record details of industrial sewing machines in required format<br>iii. Submit records for verification. | <u>*Attitude*</u>:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Accurate, thorough and timely in maintaining records<br><br><u>*Safety:*</u><br>ι. Wear PPE at all times<br>ιι. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | <u>Related Knowledge</u><br><br>2<br><br><u>Related Skills</u><br><br>5 | <u>Related Knowledge</u><br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br><u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | i. Industrial sewing machine accurately and completely set-o[ according to style requirements<br>ii. Set-up industrial sewing machine details confirmed and recorded<br>iii. Details recorded according to required format<br>iv. Industrial sewing machine |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | | | | production set-up completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information.<br>01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

| | |
|---|---|
| 04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM: TRAINEES) |
|---|---|
| 1. Industrial Industrial sewing machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |
| • Button Hole | 1:25 |
| • Zig Zag | 1:5 |
| • Bartack | 1:25 |
| • Buttonning | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Sewing Machine Parts (Needle, needle plate, bobbin, bobbin case, rotary hook, looper, presser foot, belt, upper knife, lower knife, feed dog, cutter, bearing, pulley, nuts, needle holder screws) | As required |

| | | |
|---|---|---|
| 3. | Hand tools (toolbox, set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, lock, set of hammers, set of wrenches, vice) | 1: 1 |
| 4. | Special Tools | |
| | • Bearing puller | 1:5 |
| | • Torchlight | 1:1 |
| | • Magnet pen | 1:1 |
| | • Machinist ruler | 1:1 |
| | • Timing gauge | 1:5 |
| | • Needle gauge | 1:5 |
| | • Tension gauge | 1:5 |
| | • Vernier calliper | 1:5 |
| | • Multimeter | 1:5 |
| | • Test lamp | 1:5 |
| | • Saw | 1:5 |
| | • Set of mallets | 1:5 |
| 4. | PPE (Mask, Goggles, Apron, Gloves, Safety Shoes, Ear Plug) | 1: 1 |
| 5. | Lubrication TEM | |
| | • Lubrication Oil | As required |
| | • Oil Can | 1: 1 |
| | • Oil Pan | 1: 1 |
| 6. | Production Schedule | 1: 1 |
| 7. | Set-up Checklist | 1:1 |
| 8. | Sewing Materials (Thread, fabric, elastic, piping, lace, button) | As required |
| 9. | Attachments (binding, tape binder, piping folder, taping | 1: 5 |

| | |
|---|---|
| 10. Work Aids (acrylic board mould, edge guide for sewing straight line stitching, edge guide for sewing curve lines stitching, folder for sewing wider hem) | 1: 5 |
| 11. Computer | 1: 5 |

**REFERENCES**


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2. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 2: Sewing Machine Assembly
3. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 3: Sewing Machine Set-Up
4. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 4: Attachment Fabrication
5. Standard: BS 3870 Part 1: Stitches and seams. Classification and terminology of stitch types. (British Euro standard)
6. ISO TC 38. Aug 23 2007. ISO 4916:1991, Textiles -- Seam types -- Classification and terminology. American National Standards Institute (ANSI) ASIN: B000Y2T3GQ
7. WELL DRESS Institute for Manufacturing University of Cambridge ISBN 1-902546-52-0
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9. Cheng C.Y.; Yip S.F. .Introduction to Garment Manufacture (Vol 1, 2, 3, 4). Institute of Textiles and Clothing, Programme Development Series, Educational Development Unit, The Hong Kong Polytechnic Uni.
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11. Phillips,C. 2009. Sewing Machine Attachment Handbook. Krause Publications. ISBN-13: 978-0896899230
12. Claire Shaeffer, Sewing for the Apparel Industry (2nd Edition), (2012), ISBN 978-0131884434
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# CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE ATTACHMENT AND WORK AIDS MAKING** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to make attachments and work aids to enhance the adaptability of the industrial sewing machines to specific operations according to style and production requirements and to ensure quality consistency in the output.<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Prepare attachment and work aids layout<br>• Prepare tools, equipment and materials to make attachments and work aids<br>• Make attachments and work aids<br>• Test attachments and work aids performance<br>• Complete attachment and work aids making records | | | | | | |
| **PRE-REQUISITE (if applicable)** | NA | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C04 | **LEVEL** | 2 | **TRAINING DURATION** | 140 hours | **SKILL CREDIT** | 14 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Prepare attachment and work aids layout | i. Style requirements<br>• Measurement and tolerances<br>• Required accessories | i. Determine style requirements<br>ii. Determine types of attachment required<br>iii. Determine types of | *Attitude*:<br>i. Comply with work instructions<br>ii. Work conscientiously | Related Knowledge<br><br>7 | Related Knowledge<br><br>Lecture<br>Discussion | i. Style requirements confirmed as per production |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Type of material<br>• Finishing instructions<br>ii. Types of industrial sewing machine attachment such as<br>• piping folder<br>• taping<br>• binding<br>iii. Types of industrial sewing machine work aids such as<br>• Acrylic board mould<br>• Edge guide for sewing straight lines stitching<br>• Edge guide for sewing curve lines stitching<br>• Folder for sewing wider hem<br>iv. Template material<br>v. Types of master templates<br>vi. Template making method<br>• Drawing<br>• Tracing<br>vii. Heath, Safety and Environment requirements<br>• PPE (gloves, mask, safety boots, goggles, | work aids required<br>iv. Draw/ trace template from master template | within allocated time<br>iii. Neat and meticulous in preparing layouts<br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>16 | Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | order<br>ii. Types of attachment to be made confirmed<br>iii. Types of work aids to be made confirmed<br>iv. Attachment layouts drawn/ traced from master template<br>v. Work aids layouts traced/ drawn from master template<br>vi. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | earplug)<br>• Workplace and personal safety<br>• Housekeeping | | | | | |
| 2. Prepare tools, equipment and materials for making attachments and work aids | i. Types of tools such as<br>• Measuring instrument (Vernier calliper, ruler)<br>• Cutting tools (file, hand saw)<br>• Marking tools (pricks punch)<br>• Finishing tools (sand paper [such as 200,700, 1000] polish wax)<br>• Tapping tools [such as taper, plug, bottoming, reaming])<br>ii. Types of materials such as<br>• sheet metal<br>• soldering flux<br>• tapping fluid/ coolant<br>iii. Types of equipment such as<br>• bench drill<br>• grinder<br>• work holding device<br>• clamping device<br>• soldering iron<br>iv. Types of drill bits such | i. Select tools, equipment and materials for making attachments<br>ii. Select. tools, equipment and materials for making work aids<br>iii. Prepare workplace safety requirements for making attachments and work aids<br>. | *Attitude*:<br>i. Comply with work instructions<br>ii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>ı. Practise good housekeeping | Related Knowledge<br><br>5<br><br>Related Skills<br><br>20 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Tools, equipment and materials for making attachments selected and handled in a safe manner<br>ii. Tools, equipment and materials for making work aids selected and handled in a safe manner<br>iii. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | as<br>• rolled twist drill<br>• round twist drill<br>• long series<br>v. Types of files such as<br>• Flat<br>• squar e<br>• round<br>• half round<br>• three square<br>• diamond<br>vi. Heath, Safety and Environment requirements.<br>• PPE (such as gloves, goggles, apron, mask, safety shoes, ear plug)<br>• Tools, equipment and materials handling<br>• Workplace safety<br>• Housekeeping | | | | | |
| 3. Make industrial sewing machine attachment and work aids | i. Types of template<br>ii. Sheet metal cutting procedures<br>• Template positioning methods and techniques | i. Position sheet metal on attachment template<br>ii. Cut sheet metal according to template<br>iii. Set up bench drill<br>iv. Position sheet metal | *Attitude*:<br>i. Comply with work instructions<br>ii. Work conscientiously within allocated time<br>iii. Neat and | Related Knowledge<br><br>22 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning | i. Sheet metal positioned and cut according to template using cutting tools |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Cutting methods and techniques<br>• Usage of cutting tools<br>iii. Metal drilling procedures<br>• Metal sheet positioning methods and techniques<br>• Methods of holding work fixtures<br>• Bench drill setup<br>• Drilling techniques<br>iv. Surface metal finishing procedures<br>• Methods of holding work fixtures<br>• Filing techniques<br>• Usage of sand paper<br>• Buffing wheel setup<br>• Buffing methods and techniques<br>• Usage of polish wax<br>• Polishing methods and techniques<br>v. Tapping procedures<br>• Method of holding work fixtures<br>• Thread standards (such as M2x04 for | on bench drill<br>v. Drill sheet metal<br>vi. File edges of work piece<br>vii. Sandpaper edges of work piece<br>viii. Set up buffing wheel<br>ix. Polish work piece<br>x. Make tapping threads<br>xi. Carry out sheet metal forming<br>xii. Solder work pieces | meticulous in fabrication work<br>iv. Emphasise quality output<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping<br>ii. Minimise wastage | Related Skills<br><br>50 | Related Skills<br><br>Demonstration<br>Project-based Learning | ii. Sheet metal drilled using correct drill bits<br>iii. Work piece edges filed, and smoothened with sand paper<br>iv. Buffing procedures applied<br>v. Tapping threads made according to required standard<br>vi. Forming procedures applied<br>vii. Work pieces soldered<br>viii. Tools used in a safe manner<br>ix. Personal and workplace safety as well as housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | matrix coarse, M8x1 for matrix fine)<br>• Tapping methods and techniques<br>vi. Sheet forming procedures<br>• Usage of tools for forming (such as long nose pliers, grip pliers, hammer, mallet)<br>• Metal sheet folding methods and techniques<br>• Metal sheet bending methods and techniques<br>vii. Soldering procedures<br>• Types of soldering flux<br>• Method of holding work fixtures<br>• Usage of soldering tools (such soldering iron, solder bar, solder) and flux<br>• Soldering methods and techniques<br>viii. Heath, Safety and Environment requirements related to bench work operations | | | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • PPE (such as gloves, goggles, apron, mask, safety shoes, ear plug)<br>• Tools, equipment and materials handling<br>• Safety precaution during bench work operations<br>• Workplace safety<br>• Housekeeping | | | | | |
| 4. Test attachments and work aids performance | i. Preparation of testing material<br>ii. Sewing methods and techniques<br>iii. Style requirements<br>• Measurement and tolerances<br>• Required accessories<br>• Type of material<br>• Finishing instructions | i. Prepare materials for testing<br>ii. Fix attachment and work aids to machine<br>iii. Operate industrial sewing machine<br>iv. Sew testing material<br>v. Check sewn test material against style requirements | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Emphasise quality output and consistency<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety | Related Knowledge<br><br>5<br><br>Related Skills<br><br>10 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Testing materials selected and prepared<br>ii. Attachment and work aids fixed to industrial sewing machine<br>iii. Industrial sewing machine operated according to manual instructions<br>iv. Testing material sewn<br>v. Industrial sewing |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | *Environmental:*<br>i. Practise good housekeeping | | | machine performance confirmed in compliance with style requirements<br>vi. Personal and workplace safety as well as good housekeeping practised at all times |
| 5. Complete industrial sewing machine attachment and work aids making records | i. Industrial sewing machine attachment and work aids making record format<br>ii. Industrial sewing machine attachment and work aids making record contents.<br>• Style requirements<br>• Detailed drawing<br>• Materials<br>• Types of attachment and work aids<br>• Compliance of attachment with style requirements | 1. Determine details of industrial sewing machine, attachment and work aids to be recorded<br>2. Record details of industrial sewing machine, attachment and work aids in required format<br>3. Submit records to superior for verification | *Attitude*:<br>i. Comply with work instructions<br>ii. Work conscientiously within allocated time<br>iii. Accurate, thorough and timely in maintaining records<br>*Safety:*<br>i. Wear PPE at all times<br>ii. Maintain workplace safety<br>*Environmental:*<br>i. Practise good housekeeping | Related Knowledge<br>1<br>Related Skills<br>4 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br>Related Skills<br>Demonstration<br>Project-based Learning | i. Attachments and work aids details confirmed and recorded<br>ii. Details recorded according to required format<br>iii. Industrial sewing machine attachments and work aids fabrication completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information.<br>01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command. | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

| | |
|---|---|
| 06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM: TRAINEES) |
|---|---|
| 1. Industrial Industrial sewing machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |
| • Zig Zag | 1:5 |
| • Bartack | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Sewing Machine Parts (Needle plate, presser foot, nuts) | As required |
| 3. Hand tools (toolbox, set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, , lock, set of hammers, set of wrenches, vice) | 1: 1 |
| 4. Special Tools | |
| • Bearing puller | 1:5 |
| • Torchlight | 1:1 |
| • Magnet pen | 1:1 |
| • Machinist ruler | 1:1 |
| • Timing gauge | 1:5 |
| • Needle gauge | 1: 5 |
| • Tension gauge | 1: 5 |
| • Vernier calliper | 1: 5 |
| • Multimeter | 1: 5 |

| | |
|---|---|
| • Test lamp | 1: 5 |
| • Saw | 1: 5 |
| • Set of mallets | 1: 5 |
| 5. PPE (Mask, Goggles, Apron, Gloves, Safety Shoes, Ear Plug) | 1: 1 |
| 6. Bench work TEM | |
| • Chisel | 1:5 |
| • Grinder | 1:5 |
| • Work bench | 1:5 |
| • Hand Drill | 1:5 |
| • Clipper | 1:5 |
| • Punch | 1:5 |
| • Deburring tools | 1:5 |
| • Polishing compound | 1:5 |
| • Soldering Iron | 1:2 |
| • Sheet metal thickness gauge | 1:5 |
| • Bench drill | 1:5 |
| • Master templates | 1:5 |
| • Tapping tools | 1:5 |
| • Micro meter | 1:2 |
| • Hack saw | 1:2 |
| • Snip | 1:2 |
| • Bench Top Shear | 1:5 |
| • Prick | 1:5 |
| • Sand paper | As required |

| | |
|---|---|
| • Sheet metal | As required |
| • Soldering flux | As required |
| • coolant | As required |
| 7 Sewing Materials (Thread, fabric, elastic, piping, lace, button) | As required |
| 8. Attachments (binding, tape binder, piping folder, taping | 1:5 |
| 9. Work Aids (acrylic board mould, edge guide for sewing straight line stitching, edge guide for sewing curve lines stitching, folder for sewing wider hem) | 1:5 |
| 10. Workplace Safety | |
| • Signage | 1: 25 |
| • Barricades | 1: 25 |

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3. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 3: Sewing Machine Set-Up
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# CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE SCHEDULED MAINTENANCE** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to perform preventive scheduled maintenance on industrial sewing machines according to machine manual instructions to ensure the industrial sewing machines are performing at standard performance.<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Identify scheduled maintenance requirements<br>• Prepare scheduled maintenance tools, equipment and materials<br>• Upkeep industrial sewing machine physical condition<br>• Service industrial sewing machine electrical and electronic system<br>• Service industrial sewing machine mechanical system<br>• Service industrial sewing machine pneumatic system<br>• Handle idle/ unutilised industrial sewing machines<br>• Update industrial sewing machines scheduled maintenance records | | | | | | |
| **PRE-REQUISITE (if applicable)** | NA | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C05 | **LEVEL** | 2 | **TRAINING DURATION** | 140 hours | **SKILL CREDIT** | 14 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Identify scheduled maintenance requirements. | i. Types, characteristics and features of industrial sewing machines such as<br>• Lockstitch | ι. Check maintenance schedule<br>ιι. Check industrial sewing machine maintenance records. | *Attitude*:<br>i. Comply with work instructions<br>ii. Meticulous in determining | Related Knowledge<br><br>5 | Related Knowledge<br><br>Lecture<br>Discussion | i. Type, quantity and location of industrial sewing |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Overlock<br>• Interlock<br>• Button hole<br>• Bartack<br>• Zig zag<br>• Buttoning<br>• Snap Button<br>• Chainstitch<br>ii. Industrial sewing machine parts, components and accessories<br>• Accessories (such as thread stand, table and table stand, drawer)<br>• Mechanical Components (such as machine head, belt, bobbin winder)<br>• Pneumatic components (such as cylinder valve, air regulator, solenoid valve)<br>• Electrical and electronic component (such as Servo Motor/Clutch Motor/Induction Motor, control panel) | iii. Identify type and location of industrial sewing machine for scheduled maintenance. | maintenance requirements<br><br>*Safety:*<br>i. Wear PPE at all times<br>ii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>10 | Problem-based Learning<br><br>Related Skills<br><br>Demonstration Project-based Learning & Observation | machines for scheduled maintenance determined according to work instructions<br>ii. Type of scheduled maintenance activities determined<br>iii. Industrial sewing machine maintenance historical records determined from maintenance records/ logbook |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Types of maintenance such as<br>• Preventive maintenance<br>• Corrective maintenance<br>• Predictive maintenance (for belting, rubber stand, feed bar oil seal)<br>iv. Purpose of maintenance<br>v. Maintenance schedule<br>vi. Maintenance records<br>vii. Scheduled maintenance procedures<br>viii. Heath, Safety and Environment requirements<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | |
| 2. Prepare industrial sewing machine scheduled maintenance | i. Maintenance tools, equipment and materials<br>• Common hand tools | i. Select the tools, equipment and materials for scheduled maintenance. | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing | Related Knowledge<br><br>5 | Related Knowledge<br><br>Lecture<br>Discussion | i. Scheduled maintenance tools, equipment and materials |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| tools, equipment and materials. | • Test material<br>• Testing tools (test pen, multi meter, test lamp)<br>• Rug<br>• Cleaning solvent (such as spot lifter)<br>ii. Spare part requisition procedures | ii. Raise spare parts requisition (if applicable)<br>iii. Select proper signage<br>iv. Install barricades around maintenance location | machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Set up signage and barricades<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | <u>Related Skills</u><br><br>10 | Problem-based Learning<br><u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | selected and handled in a safe manner<br>ii. Spare parts requisition raised if applicable<br>iii. Proper signage placed for safety precaution<br>iv. Barricades set up around maintenance location |
| 3. Upkeep industrial sewing machine physical condition | i. Physical condition<br>• Paint<br>• Dust<br>• Oil spilt<br>• Rust<br>ii. Wiring condition<br>iii. Anti-rust prevention<br>iv. Component condition<br>• Roller<br>• Thread stand<br>• Belting<br>• Table top<br>• Waste chute<br>• Machine safety | i. Check physical condition of industrial sewing machine<br>ii. Remove dust<br>iii. Remove rust<br>iv. Clean oil spilt<br>v. Refurbish paint<br>vi. Replace worn out parts | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Thorough in checking machine condition<br>iv. Work conscientiously within allocated time | <u>Related Knowledge</u><br><br>5<br><br><u>Related Skills</u><br><br>10 | <u>Related Knowledge</u><br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br><u>Related Skills</u><br><br>Demonstration | i. Industrial sewing machine physical condition checked to ensure machine is in acceptable condition according to workplace requirements<br>ii. Dust and rust |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | guard<br>v. Related Heath, Safety and Environment requirements<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | *Safety:*<br>ι. Use tools in a safe manner<br>ιι. Wear PPE at all times<br>ιιι. Maintain workplace safety<br>ιϖ. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | | Project-based Learning | removed<br>ιιι. Oil spilt cleaned<br>ιϖ. Industrial sewing machine paint refurbished<br>ϖ. Worn out parts replaced<br>ϖι. Personal and workplace safety as well as good housekeeping practised at all times |
| 4. Service electrical and electronic system | i. Electrical and electronic components<br>• control box<br>• sensor<br>• Cooling fan<br>• Connector<br>• Control panel<br>• Motor (servo motor, induction motor, clutch motor)<br>• Wiring<br>ii. Electrical and electronic component checking methods and techniques | i. Clean electrical and electronic components<br>ii. Check condition of socket<br>iii. Check condition of wires<br>iv. Record and report abnormalities for further action | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Meticulous and systematic in servicing work<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner | Related Knowledge<br><br>5<br><br>Related Skills<br><br>10 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Electrical and electronic components cleaned<br>ii. Socket and wiring condition checked<br>iii. Abnormalities in electrical and electronic system recorded and reported for further action<br>iv. Personal and |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Usage of maintenance tools, equipment and materials<br>iv. Cleaning methods and techniques<br>v. Abnormalities in electronic and electrical system<br>• Power supply failure<br>• Worn out wiring<br>• Faulty components<br>vi. Heath, Safety and Environment requirements related to servicing electrical and electronic system<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | | | workplace safety as well as good housekeeping practised at all times |
| 5. Service mechanical system | i. Mechanical components<br>ii. Feeding mechanism (feed dog, needle plate, presser foot, fabric tensioner (roller/puller)) | i. Clean feed dog<br>ii. Clean thread guide<br>iii. Clean tension set<br>iv. Clean upper and lower knife<br>v. Change/ replenish lubrication oil | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions | <u>Related Knowledge</u><br><br>10 | <u>Related Knowledge</u><br><br>Lecture<br>Discussion<br>Problem-based Learning | i. Feed dog, thread guide, tension set, upper and lower knife and needle bar cleaned |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Threading mechanism (Thread tension set)<br>iv. Trimming mechanism (Upper knife, Lower knife)<br>v. Lubrication system (plug, oil, oil filter, oil seal)<br>vi. Driving mechanism (Needle to hook/looper relation)<br>vii. Mechanical component checking methods and techniques<br>viii. Usage of maintenance tools, equipment and materials<br>ix. Cleaning methods and techniques<br>x. Lubrication methods and techniques<br>xi. Types of abnormalities in mechanical system<br>• Oil leak<br>• Broken thread<br>• Excessive vibration<br>• Fabric entanglement<br>• Noise abnormalities<br>xii. Heath, Safety and Environment requirements related to servicing | vi. Change oil seal<br>vii. Change /clean oil filter<br>viii. Clean dust from needle bar.<br>ix. Polish rotary hook<br>x. Polish looper<br>xi. Repair broken parts<br>xii. Report abnormalities in mechanical system | iii. Thorough and systematic in servicing work<br>iv. Work conscientiously within allocated time<br><br><u>*Safety:*</u><br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | <u>Related Skills</u><br><br>25 | <u>Related Skills</u><br><br>Demonstration<br>Project-based Learning | to remove dust and rust<br>ii. Lubrication oil changed or replenished<br>iii. Oil seal changed<br>iv. Oil filter cleaned or changed<br>v. Rotary hook and looper polished<br>vi. Abnormalities and defective components recorded and reported for further action<br>vii. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | mechanical system<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | |
| 6. Service pneumatic system | i. Pneumatic system<br>• Trimming mechanism<br>• Foot lifter mechanism<br>• Dust cleaning mechanism<br>• Pneumatic control system<br>ii. Trimming mechanism components (such as upper knife, lower knife).<br>iii. Pneumatic components (such as air cylinder, air filter, air regulators, solenoid valve).<br>iv. Pneumatic system component checking methods and techniques<br>v. Usage of maintenance tools, | i. Clean valve<br>ii. Clean air cylinder<br>iii. Clean air filter<br>iv. Check piping condition<br>v. Check air fitting<br>vi. Regulate air pressure<br>vii. Report abnormalities in pneumatic system | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Thorough and systematic in servicing work<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good | Related Knowledge<br><br>8<br><br>Related Skills<br><br>16 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Valve, air cylinder, air filter cleaned to remove dirt<br>ii. Piping condition checked to ensure absence of wear and tear<br>iii. Air fitting checked to ensure no leakage<br>iv. Air pressure regulated to required level<br>v. Abnormalities in pneumatic system recorded and reported for further action<br>vi. Personal and |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | equipment and materials<br>vi. Cleaning methods and techniques<br>vii. Type of abnormalities in pneumatic system<br>• Piping condition<br>• Broken / Loose /worn out air fitting<br>• Air cylinder leakage<br>viii. Heath, Safety and Environment requirements related to servicing pneumatic system<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | housekeeping | | | workplace safety as well as good housekeeping practised at all times |
| 7. Handle idle/ unutilised industrial sewing machines | i. Definition of unutilised/ idle industrial sewing machines<br>ii. Procedures for handling unutilised/idle industrial sewing machines<br>iii. Records of unutilised industrial sewing machines | i. Determine unutilised industrial sewing machines<br>ii. Clean unutilised industrial sewing machines<br>iii. Tie unutilised industrial sewing machines<br>iv. Cover unutilised industrial sewing | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time | Related Knowledge<br>5 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning | i. Unutilised/ idle industrial sewing machines to be stored determined according to work instructions<br>ii. Unutilised |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iv. Tools, equipment and materials for handling unutilised industrial sewing machines<br>• air gun,<br>• cable tie<br>• plastic wrap<br>• industrial sewing machine cover<br>• storage zone<br>v. Heath, Safety and Environment requirements related to handling unutilised/ idle industrial sewing machines<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | machine<br>v. Label unutilised industrial sewing machines<br>vi. Record machine details<br>vii. Transfer unutilised industrial sewing machines<br>viii. Store at designated areas | *Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Handle idle industrial sewing machines with care<br>iv. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>10 | Related Skills<br><br>Demonstration<br>Project-based Learning | industrial sewing machines cleaned, tied, covered and labelled<br>iii. Unutilised industrial sewing machine details recorded according to required format<br>iv. Unutilised industrial sewing machines transferred and stored at designated areas<br>v. Personal and workplace safety as well as good housekeepin g practised at all times |
| 8. Update industrial sewing scheduled | i. Industrial sewing machine scheduled maintenance record format | i. Determine required industrial sewing machine and scheduled | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with | Related Knowledge<br><br>1 | Related Knowledge<br><br>Lecture | i. Scheduled maintenance details confirmed |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| maintenance records | ii. Industrial sewing machine scheduled maintenance record contents.<br>• Type of machine<br>• serial number<br>• Model<br>• maintenance date<br>• quantity<br>• location<br>• type of replaced/ repaired parts. | maintenance details<br>ii. Record details in required format<br>iii. Submit records for verification | industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Accurate, complete and timely in updating records<br><br>*Safety:*<br>ι. Wear PPE at all times<br>ιι. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>5 | Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | and recorded<br>ii. Details recorded according to required format<br>iii. Scheduled maintenance completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information.<br>01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM: TRAINEES) |
|---|---|
| 1. Industrial Industrial sewing machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |
| • Button Hole | 1:25 |
| • Zig Zag | 1:5 |
| • Bartack | 1:25 |
| • Buttonning | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Sewing Machine Parts (Needle, needle plate, bobbin, bobbin case, rotary hook, looper, presser foot, belt, upper knife, lower knife, feed dog, cutter, bearing, pulley, nuts, needle holder screws) | As required |
| 3. Hand tools (toolbox, set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, , lock, set of hammers, set of wrenches, vice) | 1: 1 |
| 4. Special Tools | |
| • Bearing puller | 1:5 |
| • Torchlight | 1:1 |
| • Magnet pen | 1:1 |
| • Machinist ruler | 1:1 |
| • Timing gauge | 1:5 |
| • Needle gauge | 1:5 |

| | |
|---|---|
| • Tension gauge | 1:5 |
| • Vernier calliper | 1:5 |
| • Multimeter | 1:5 |
| • Test lamp | 1:5 |
| • Saw | 1:5 |
| • Set of mallets | 1:5 |
| 5. PPE (Mask, Goggles, Apron, Gloves, Safety Shoes, Ear Plug) | 1: 1 |
| 6. Lubrication TEM | |
| • Lubrication Oil | As required |
| • Oil Can | 1: 1 |
| • Oil Pan | 1: 1 |
| 7. Manual | |
| • Service manual | 1:1 |
| • Maintenance schedule | 1:1 |
| • Production schedule | 1:1 |
| 8 Material Safety Data Sheet (MSDS) | 1:1 |
| 9. Checklist | |
| • Scheduled Maintenance Checklist | 1:1 |
| 10 Scheduled Maintenance TEM | |
| • Air gun | 1:15 |
| • Cloth | 1:1 |
| • Brush | 1:1 |
| • Air compressor | 1:25 |
| • Oil pump | 1:25 |
| • Cleaning agent | As required |
| • Paint | As required |
| • Anti rust agent | As required |
| • Rope | As required |

| | |
|---|---|
| • Wires | As required |
| • Cable tie | As required |
| 11. Workplace Safety | |
| • Signage | 1: 25 |
| • Barricades | 1: 25 |
| 12. Trolley | 1: 25 |
| 13. Computer | 1: 5 |

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3. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 3: Sewing Machine Set-Up
4. PSMB. Industrial Sewing Machine Technician Apprenticeship Scheme SMT 4: Attachment Fabrication
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## CURRICULUM of COMPETENCY UNIT (CoCU)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **SECTOR** | **TEXTILE AND APPAREL** | | | | | | |
| **SUB SECTOR** | **APPAREL MANUFACTURING** | | | | | | |
| **JOB AREA** | **MACHINE MAINTENANCE (SEWING MACHINE)** | | | | | | |
| **NOSS TITLE** | **INDUSTRIAL SEWING MACHINE MAINTENANCE** | | | | | | |
| **COMPETENCY UNIT TITLE** | **INDUSTRIAL SEWING MACHINE REPAIR** | | | | | | |
| **LEARNING OUTCOME** | The person who is competent in this competency unit shall be able to repair malfunctioned industrial sewing machines to restore the machines back to normal operating condition according to machine manual instructions..<br><br>Upon completion of this competency unit, trainees will be able to:-<br>• Determine industrial sewing machine malfunction<br>• Prepare repair tools, equipment and materials<br>• Replace faulty electrical and electronic system<br>• Rectify faulty mechanical system<br>• Rectify faulty pneumatic system<br>• Test repaired industrial sewing machine performance<br>• Update industrial sewing machine repair records | | | | | | |
| **PRE-REQUISITE (if applicable)** | Industrial Sewing Machine Installation, Industrial Sewing Machine Production Set-Up | | | | | | |
| **COMPETENCY UNIT ID** | TA-014-2:2014-C06 | **LEVEL** | 2 | **TRAINING DURATION** | 180 hours | **SKILL CREDIT** | 18 |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| 1. Determine industrial sewing machine malfunction. | i. Types, characteristics and features of industrial sewing machines such as<br>• Lockstitch<br>• Overlock<br>• Interlock<br>• Button hole | i. Identify type of industrial sewing machine for repair<br>ii. Interpret machine break down information<br>iii. Identify type of malfunction | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work | Related Knowledge<br><br>10 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning | i. Type and location of industrial sewing machine for repair works determined according to |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • Bartack<br>• Zig zag<br>• Buttoning<br>• Snap Button<br>• Chainstitch<br>ii. Industrial sewing machine parts, components and accessories<br>• Accessories (such as thread stand, table and table stand, drawer)<br>• Mechanical Components (such as machine head, belt, bobbin winder)<br>• Pneumatic components (such as cylinder valve, air regulator, solenoid valve)<br>• Electrical and electronic component (such as Servo Motor/Clutch Motor/Induction Motor, control panel)<br>iii. Sources of information on machine malfunction<br>• Light indicator on | iv. Identify root cause of malfunction<br>v. Identify type of repair work required | conscientiously within allocated time<br>iv. Observant and alert in identifying machine malfunctions<br>v. Thorough and systematic in diagnosing malfunction and identifying root cause<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Skills<br><br>20 | Related Skills<br><br>Demonstration<br>Project-based Learning | work instructions or breakdown report<br>ii. Type of breakdown interpreted from breakdown report<br>iii. Industrial sewing machine maintenance historical records interpreted to assist in diagnosis<br>iv. Type of machine malfunction confirmed<br>v. Root cause of malfunction identified through various analysis methods and confirmed<br>vi. Type of repair work required to |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | malfunction industrial sewing machine<br>• Malfunction report<br>• Observation<br>• Operators' explanation<br>iv. Methods of determining malfunction such as<br>• Visual observation<br>• Analysis of output sample<br>v. Types of defective stitching formation such as<br>• Puckering<br>• Jump stitch<br>• Staggering stitch<br>• Uneven stitch<br>• Broken stitch<br>• Ravelled stitch<br>vi. Types of malfunction.<br>• Broken thread<br>• Needle Picking<br>• Needle Cub<br>• Shading<br>• Scorch<br>• Excessive vibration<br>• Fabric entanglement<br>• Noise abnormalities<br>vii. Causes of malfunction | | | | | rectify malfunction confirmed<br>vii. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | in feeding mechanism<br>• Faulty feed dog<br>• Error in feed dog height setting<br>• Inappropriate feed dog type<br>• Defective and wrong type of presser foot<br>• Inaccurate presser foot pressure<br>• Defective needle plate<br>viii. Causes of malfunction in driving mechanism<br>• Defective upper and lower looper<br>• Inaccurate setting of upper and lower looper<br>• Defective hook<br>• Inaccurate hook settings<br>• Faulty bobbin and bobbin case<br>• Loosened needle bar<br>• Unstable needle bar<br>• Inaccurate needle bar height setting<br>ix. Causes of malfunction in | | | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | threading mechanism<br>• Faulty thread take up<br>• Inaccurate thread tension setting<br>• Incorrect needle and thread specification<br>x. Causes of malfunction in lubrication mechanism<br>• Poor oil circulation<br>• Oil leakage<br>• Faulty oil pump<br>xi. Causes of malfunction in electrical and electronic system<br>• Parameter setting error<br>• Faulty components<br>xii. Causes of malfunction in pneumatic system<br>• Rust<br>• Blockage<br>• Defective tubing<br>• Defective components<br>xiii. Other causes of malfunction such as sewing operator's negligence | | | | | |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | xiv. Types of repair works.<br>• Cleaning<br>• Replacement<br>• Repair<br>• Adjustment<br>• Modification | | | | | |
| 2. Prepare industrial sewing machine repair tools, equipment and materials. | i. Repair tools, equipment and materials<br>• Common hand tools<br>• Special tools (such as Needle bar height gauge, Looper and needle timing gauge)<br>• Test material<br>• Testing tools (test pen, multi meter, test lamp)<br>• Rug<br>• Cleaning solvent (such as spot lifter)<br>ii. Spare parts requisition procedures<br>iii. Heath, Safety and Environment requirements<br>• (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety | i. Interpret troubleshooting instructions from industrial sewing machine manual<br>ii. Select tools, equipment and materials for repair work.<br>iii. Raise spare parts requisition (if applicable)<br>iv. Set up signage and barricades | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>ı. Practise good housekeeping | Related Knowledge<br>5<br><br>Related Skills<br>10 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br>Demonstration<br>Project-based Learning | i. Rectification procedures determined according to industrial sewing machine manual and workplace repair procedures<br>ii. Tools, equipment and materials selected and handled in a safe manner<br>iii. Spare parts requisition raised if applicable<br>iv. Signage and barricades set up for maintenance work<br>v. Personal and workplace |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | safety as well as good housekeeping practised at all times |
| 3. Rectify faulty electrical and electronic system. | i. Electrical and electronic components<br>• control box (sensor, cooling fan, connector)<br>• Control panel<br>• Motor (servo motor, induction motor, clutch motor)<br>• Wiring<br>ii. Electrical and electronic component checking methods and techniques<br>iii. Usage of maintenance tools, equipment and materials<br>iv. Cleaning methods and techniques<br>v. Electrical and electronic components replacement procedures<br>vi. Electrical and | i. Locate faulty components.<br>ii. Replace faulty electrical and electronic component.<br>iii. Repair faulty electrical and electronic component.<br>iv. Adjust electrical and electronic system.<br>v. Clean electrical and electronic system.<br>vi. Identify faulty components for external repair.<br>vii. Test functionality of the replaced component. | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Meticulous and systematic in rectification work<br>iv. Work conscientiously within allocated time<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:*<br>i. Practise good housekeeping | Related Knowledge<br><br>10<br><br>Related Skills<br><br>20 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Faulty electrical and electronic components located and removed<br>ii. Electrical and electronic system cleaned<br>iii. Faulty components replaced with new ones<br>iv. Faulty components repaired and reinstalled<br>v. Electrical and electronic system adjusted back to standard operating condition<br>vi. Repaired industrial sewing machine |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | electronic components repair procedures<br>vii. Functionality test.<br>viii. Heath, Safety and Environment requirements related to rectifying electrical and electronic system<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | tested to confirm functionality of replaced, repaired or adjusted component<br>vii. Faulty components for external repair identified and reported for further action<br>viii. Personal and workplace safety as well as good housekeepin g practised at all times |
| 4. Rectify faulty mechanical system. | i. Mechanical System<br>• Feeding mechanism<br>• Threading mechanism<br>• Lubrication system<br>• Driving mechanism<br>ii. Feeding mechanism components<br>• feed dog<br>• needle plate<br>• presser foot<br>• fabric tensioner (roller/puller | i. Locate faulty components.<br>ii. Adjust mechanical system settings.<br>iii. Replace faulty component.<br>iv. Repair faulty component.<br>v. Clean mechanical components.<br>vi. Test functionality of the replaced component. | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Meticulous and systematic in rectification work<br>iv. Work conscientiously within allocated time | Related Knowledge<br>15<br>Related Skills<br>40 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br>Related Skills<br>Demonstration<br>Project-based | i. Faulty mechanical components located and removed<br>ii. Mechanical components cleaned<br>iii. Faulty components replaced with new ones<br>iv. Faulty components |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | iii. Threading mechanism components<br>• Thread tension set<br>iv. Trimming mechanism components<br>• Upper knife<br>• Lower knife<br>v. Lubrication system components<br>• Plug<br>• Oil filter and oil seal<br>vi. Driving mechanism components<br>• Needle to hook/looper relation<br>• Timing belt<br>vii. Mechanical component checking methods and techniques<br>viii. Usage of repair tools, equipment and materials<br>ix. Cleaning methods and techniques<br>x. Lubrication methods and techniques<br>xi. Mechanical system adjustment procedures<br>xii. Mechanical components | | <u>*Safety:*</u><br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br><br><u>*Environmental:*</u><br>i. Practise good housekeeping | | Learning | repaired and reinstalled<br>v. Mechanical system settings adjusted back to standard operating condition<br>vi. Repaired industrial sewing machine tested to confirm functionality of replaced, repaired or adjusted component<br>i. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | replacement procedures<br>xiii. Mechanical components repair procedures<br>xiv. Basic welding procedures<br>xv. Functionality test.<br>xvi. Heath, Safety and Environment requirements related to rectifying mechanical system<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | |
| 5. Rectify faulty pneumatic system. | i. Pneumatic system<br>• Trimming mechanism<br>• Foot lifter mechanism<br>• Dust cleaning mechanism<br>• Pneumatic control system<br>ii. Trimming mechanism components | i. Locate faulty components.<br>ii. Adjust pneumatic system settings.<br>iii. Replace faulty component.<br>iv. Repair faulty component.<br>v. Clean pneumatic components.<br>vi. Test functionality of | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Meticulous and systematic in repair work<br>iv. Work | Related Knowledge<br>10<br>Related | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br>Related Skills | ı. Faulty pneumatic components located and removed<br>ıı. Pneumatic components cleaned<br>ııı. Faulty components replaced with |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | • upper knife<br>• lower knife<br>iii. Pneumatic components such as<br>• air cylinder<br>• air filter<br>• air regulators<br>• solenoid valve<br>iv. Pneumatic system component checking methods and techniques<br>v. Usage of maintenance tools, equipment and materials<br>vi. Cleaning methods and techniques<br>vii. Pneumatic system adjustment procedures<br>viii. Pneumatic system components replacement procedures<br>ix. Pneumatic system components repair procedures<br>x. Functionality test.<br>xi. Heath, Safety and Environment requirements related to rectifying pneumatic system<br>• PPE (mask, | the rectified component. | conscientiously within allocated time<br><br>*Safety:*<br>ι. Use tools in a safe manner<br>ιι. Wear PPE at all times<br>ιιι. Maintain workplace safety<br><br>*Environmental:*<br>i. Practise good housekeeping | Skills<br><br>20 | Demonstration<br>Project-based Learning | new ones<br>ιϖ. Faulty components repaired and reinstalled<br>ϖ. Pneumatic system settings adjusted back to standard operating condition<br>ϖι. Repaired industrial sewing machine tested to confirm functionality of replaced, repaired or adjusted component<br>ϖιι. Personal and workplace safety as well as good housekeeping practised at all times |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | | | | | |
| 6. Test repaired industrial sewing machine performance | i. Industrial sewing machine standard performance<br>ii. Industrial sewing machine operation<br>iii. Preparation of testing materials.<br>iv. Industrial sewing machine performance testing procedures<br>v. Heath, Safety and Environment requirements related to industrial sewing machine performance testing<br>• PPE (mask, gloves, apron, safety boots, ear plug, goggles)<br>• Workplace safety<br>• Material Safety Data Sheet (MSDS) (Material Safety Data Sheet) | i. Prepare testing material<br>ii. Operate industrial sewing machine<br>iii. Determine performance of industrial sewing machine<br>iv. Compare performance of industrial sewing machine with standard performance | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Emphasise quality output and consistency<br><br>*Safety:*<br>i. Use tools in a safe manner<br>ii. Wear PPE at all times<br>iii. Maintain workplace safety<br>iv. Handle electrical and electronic components safely<br><br>*Environmental:* | Related Knowledge<br><br>5<br><br>Related Skills<br><br>10 | Related Knowledge<br><br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br><br>Demonstration<br>Project-based Learning | i. Testing material prepared<br>ii. Industrial sewing machine operated in accordance with industrial sewing machine manual<br>iii. Industrial sewing machine performance compared with standard performance<br>iv. Unrectified industrial sewing machines recorded and reported for further action |

| Work Activities | Related Knowledge | Related Skills | Attitude/Safety/ Environmental | Training Hours | Delivery Mode | Assessment Criteria |
|---|---|---|---|---|---|---|
| | | | i. Practise good housekeeping | | | |
| 7. Update industrial sewing machine repair records. | i. Industrial sewing machine repair record format<br>ii. Industrial sewing machine repair record contents.<br>• Type of machine<br>• serial number<br>• Model<br>• maintenance date<br>• quantity<br>• location<br>• Type of rectification (such as replacement, repaired and adjustment) performed | i. Determine required industrial sewing machine and repair work details<br>ii. Record details in required format<br>iii. Submit records for verification | *Attitude*:<br>i. Comply with work instructions<br>ii. Comply with industrial sewing machine manual instructions<br>iii. Work conscientiously within allocated time<br>iv. Accurate, complete and timely in updating records<br><br>*Safety:*<br>i. Wear PPE at all times<br>ii. Maintain workplace safety<br><br>*Environmental:*<br>ι. Practise good housekeeping | Related Knowledge<br>1<br><br>Related Skills<br>4 | Related Knowledge<br>Lecture<br>Discussion<br>Problem-based Learning<br><br>Related Skills<br>Demonstration<br>Project-based Learning | i. Repair work details confirmed and recorded<br>ii. Details recorded according to required format<br>iii. Repair works completed within allocated time |

**Employability Skills**

| Core Abilities | Social Skills |
|---|---|
| 01.01 Identify and gather information.<br>01.02 Document information procedures or processes.<br>01.03 Utilise basic IT applications.<br>01.04 Analyse information.<br>01.05 Utilise the Internet to locate and gather information.<br>01.06 Utilise word processor to process information<br>02.01 Interpret and follow manuals, instructions and SOP's.<br>02.03 Communicate clearly.<br>02.04 Prepare brief reports and checklist using standard forms.<br>02.05 Read/Interpret flowcharts and pictorial information.<br>02.08 Prepare pictorial and graphic information<br>03.01 Apply cultural requirement to the workplace.<br>03.02 Demonstrate integrity and apply practical practices.<br>03.03 Accept responsibility for own work and work area.<br>03.04 Seek and act constructively upon feedback about work performance.<br>03.05 Demonstrate safety skills.<br>03.06 Respond appropriately to people and situations.<br>03.07 Resolve interpersonal conflicts.<br>03.08 Develop and maintain cooperation within work group.<br>04.01 Organise own work activities.<br>04.02 Set and revise own objectives and goals.<br>04.03 Organise and maintain own workplace.<br>04.04 Apply problem solving strategies.<br>04.05 Demonstrate initiative and flexibility<br>06.01 Understand systems.<br>06.02 Comply with and follow chain of command.<br>06.03 Identify and highlight problems.<br>06.04 Adapt competencies to new situations/systems<br>06.05 Analyse technical systems.<br>06.06 Monitor and correct performance of systems | 1. Communication skills<br>2. Conceptual skills<br>3. Interpersonal skills<br>4. Learning skills<br>5. Leadership skills<br>6. Multitasking and prioritising<br>7. Self-discipline<br>8. Teamwork |

**Tools, Equipment and Materials (TEM)**

| ITEMS | RATIO (TEM: TRAINEES) |
|---|---|
| 1. Industrial Industrial sewing machines with instruction manual | |
| • Lockstitch | 1:1 |
| • Interlock | 1:5 |
| • Overlock | 1:2 |
| • Button Hole | 1:25 |
| • Zig Zag | 1:5 |
| • Bartack | 1:25 |
| • Buttonning | 1:25 |
| • Waist band | 1:5 |
| • Double needle | 1:5 |
| 2. Sewing Machine Parts (Needle, needle plate, bobbin, bobbin case, rotary hook, looper, presser foot, belt, upper knife, lower knife, feed dog, cutter, bearing, pulley, nuts, needle holder screws) | As required |
| 3. Hand tools (toolbox, set of screwdrivers, set of spanners, Allen key, adjustable spanner, set of pliers, test pen, scissor, tweezers, diamond file, , lock, set of hammers, set of wrenches, vice) | 1: 1 |
| 4. Special Tools | |
| • Bearing puller | 1:5 |
| • Torchlight | 1:1 |
| • Magnet pen | 1:1 |
| • Machinist ruler | 1:1 |
| • Timing gauge | 1:5 |
| • Needle gauge | 1:5 |
| • Tension gauge | 1:5 |
| • Vernier calliper | 1:5 |
| • Multimeter | 1:5 |

| | | |
|---|---|---|
| | • Test lamp | 1:5 |
| | • Saw | 1:5 |
| | • Set of mallets | 1:5 |
| 5. | PPE (Mask, Goggles, Apron, Gloves, Safety Shoes, Ear Plug) | 1: 1 |
| 6. | Lubrication TEM | |
| | • Lubrication Oil | As required |
| | • Oil Can | 1: 1 |
| | • Oil Pan | 1: 1 |
| 7. | Manual | |
| | • Service manual | 1:1 |
| | • Maintenance schedule | 1:1 |
| | • Production schedule | 1:1 |
| 8 | Material Safety Data Sheet (MSDS) | 1:1 |
| 9. | Checklist | |
| | • Repair checklist | 1:1 |
| 10 | Sewing Materials (Thread, fabric, elastic, piping, lace, button) | As required |
| 11. | Attachments (binding, tape binder, piping folder, taping | 1: 5 |
| 12. | Work Aids (acrylic board mould, edge guide for sewing straight line stitching, edge guide for sewing curve lines stitching, folder for sewing wider hem) | 1: 5 |
| 13. | Scheduled Maintenance TEM | |
| | • Air gun | 1:15 |
| | • Cloth | 1:1 |
| | • Brush | 1:1 |
| | • Air compressor | 1:25 |
| | • Oil pump | 1:25 |
| | • Cleaning agent | As required |
| | • Paint | As required |

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|---|---|
| • Anti rust agent | As required |
| • Rope | As required |
| • Wires | As required |
| • Cable tie | As required |
| 14. Workplace Safety | |
| • Signage | 1: 25 |
| • Barricades | 1: 25 |
| 15. Trolley | 1: 25 |
| 16. Computer | 1: 5 |

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**TRAINING HOURS SUMMARY**

| | |
|---|---|
| SECTOR | : TEXTILE AND APPAREL |
| SUB SECTOR | : APPAREL MANUFACTURING |
| JOB AREA | : MACHINE MAINTENANCE (SEWING MACHINE) |
| NOSS TITLE | : INDUSTRIAL SEWING MACHINE MAINTENANCE |
| JOB LEVEL | : TWO (2) |

| CU ID | COMPETENCY UNIT | TRAINING DURATION HOURS |
|---|---|---|
| **TA-014-2:2014-C01** | INDUSTRIAL SEWING MACHINE INSTALLATION | 70 |
| **TA-014-2:2014-C02** | INDUSTRIAL SEWING MACHINE PRE-OPERATING SET- UP | 120 |
| **TA-014-2:2014-C03** | INDUSTRIAL SEWING MACHINE PRODUCTION SET UP | 170 |
| **TA-014-2:2014-C04** | INDUSTRIAL SEWING MACHINE ATTACHMENT AND WORK AIDS FABRICATION | 140 |
| **TA-014-2:2014-C05** | INDUSTRIAL SEWING MACHINE SCHEDULED MAINTENANCE | 140 |
| **TA-014-2:2014-C06** | INDUSTRIAL SEWING MACHINE REPAIR | 180 |
| | TOTAL | **820** |

**GLOSSARY**

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|---|---|
| Attachment and Work Aid | Labour saving devices used to simplify an operation and facilitate the use of sewing machine to make it more adaptable to specific operations |
| Back-tack | A few stitches taken in reverse to secure a line of stitching |
| Bar Tack | A group of closely sewn stitches (back and forth from side to side / zig zag) |
| Bobbin | The spool that sits in the lower part of the machine. It holds the thread that makes the underside of a stitch |
| Bobbin Case | The part of the machine that houses the bobbin |
| Broken Stitch | Caused by tight tension, excessive machine speed, sharp feeds or too much pressure. |
| Chainstitch | A stitch that interloops the needle thread(s) with a bottom looper thread on the underside of the seam. Most main seams sewn in woven apparel are sewn with this stitch formation. |
| Clutch Motor | Motor runs continuously, and sewing machine is started with a treadle activated clutch and stopped by a heel operated brake |
| Coverstitch | A stitch often used to seam knitwear, which consists of at least two needle threads, a looper thread and a top thread passing over the edge of the material. Spun or textured polyester thread is generally used to form these stitches. |
| Cylinder bed | This type of garments sewing machine has an increased working height and a bed in the shape of a horizontal arm. It is especially suitable for sewing on tubular parts, such as cuffs, sleeves, and trouser legs, and also for button sewing and bar tacking. This sewing machine is used extensively in the making of clothing from knitted fabrics. |
| Feed/ Feed Dog | The metal teeth that stick up above the needle plate. They move the fabric forward as it's being stitched |
| Flat bed | A type of sewing machine or serger which is intended to be installed into a table or cabinet so that the sewing surface of the machine becomes continuous with the |

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|---|---|
| | table or cabinet surface. This can be very nice since it helps support large fabric objects that could be sewn. |
| Hand Pulley | The wheel on the side of the machine that can be turned manually to adjust the height of the needle. |
| Hem | to bottom edge of fabric which is sewn to hide frayed edges |
| Jump Stitch | Movement of the sewing head without needle penetration,. No sewing occurs during a jump stitch. |
| Lockstitch | A stitch formed by interlocking needle threads with a bobbin thread. This is the most common stitch formed on industrial sewing machines |
| Malformed Piece | Result from machine fault and/or adjustment or failure of operator to position piece properly. |
| Needle Bar Stroke | The range of movement of the needle up and down. In general, a longer stroke makes a sewing machine more capable in thick fabric assemblies |
| Needle Bar/ Needle Clamp | The part that holds the needle |
| Needle Cub | Threads broken or material damaged by needles. Caused by incorrect size, point or design or' needle. |
| Needle Picking | Threads broken or material weave distorted by sewing machine needle having burred point |
| Needle Plate | The flat surface below the needle that the needle goes down through when making a stitch. It can be changed for different stitching jobs. Also called a *throat plate* |
| Needle System | Although there are hundreds of different needle systems, every sewing machine has a compatible needle system that is specific to that machine. It is important to know your sewing machine's needle system when you purchase needles |
| Post bed | This type of sewing machine has an increased working height. Special sewing applications are found in the working of three-dimensional products. e.g. shoes and bags. The post makes it easier to work on tight curves and corners, to sew in sleeves and to complete large, half-assembled products |
| Presser Foot | The piece that sits below the needle and holds the fabric down as it’s being stitched. It can be changed for different stitching jobs. |

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| Raised bed | The bedplate is in the form of a plinth. It facilitates the assembly of pre-sewn parts and is especially suitable for the fitting of accessories and special attachments. This is the basic form for various specialized garments sewing machines such as buttonholers |
| Ravelled Stitch | Caused by feed dog cuts on thread, skipped stitches and unbalanced tension |
| Scorch | Machine temperature too high for fabric. or operator failure to remove piece at proper time. |
| Seam Puckering | Seam puckering refers to the gathering of a seam during sewing, after sewing, or after laundering, causing an unacceptable seam appearance. Seam puckering is more common on woven fabrics than knits; and it is prominent on tightly woven fabrics. Puckering is usually caused by yarn displacement, excessive thread tension, uneven ply feeding or shrinkage. |
| Servo Motor | Acts similar to a clutch motor except the motor only runs when engaged resulting in a quieter, lighter, more energy efficient motor with variable speed control. However, slow speed power in heavy fabric assemblies is poor |
| Shading | Where temperature of machine change colour of fabric |
| Skipped Stitch | Caused by faulty loop, needle hook, incorrect tensions or machine timing |
| Staggered Stitch | Usually caused by faulty feed motion or use of wrong type needle and *or* fittings. |
| Tension Regulator/ Adjuster/ Dial | The mechanism that allows you to adjust the tension of your upper, and sometimes bobbin, thread. |
| Uneven Stitch | Caused by excessive machine speed, improper fittings, and worn machine parts. |