



Australian Government

UEENEEH121A Fault find and repair high volume office equipment

Release: 2

UEENEEH121A Fault find and repair high volume office equipment

Modification History

Not applicable.

Unit Descriptor

Unit Descriptor

1) Scope:

1.1) Descriptor

This unit covers fault finding and repair in high volume photo copiers (40 to 80 ppm), fax machines and the like. The unit encompasses safe working practices, interpreting electrical and mechanical diagrams, applying knowledge of office equipment to logical fault finding procedures, conducting repairs, safety and functional testing and completing the necessary service documentation.

Application of the Unit

Application of the Unit 2)

This unit is intended for competency development entry-level employment based programs incorporated in approved contracts of training or approved training programs. It may also used to augment previously acquired competencies.

Licensing/Regulatory Information

License to practice 3)

The skills and knowledge described in this unit do not require a license to practice in the workplace provided equipment is not connected to installation wiring at voltage above 50 V a.c. or 120 V d.c. However other conditions may apply in some States/Territories subject to

License to practice**3)**

regulations related to electrical work.

Practice in the workplace and during training is also subject to regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Note:

1. Compliance with permits may be required in various jurisdictions and typically relates to the operation of plant, machinery and equipment such as elevating work platforms, powder operated fixing tools, power operated tools, vehicles, road signage and traffic control, lifting equipment and the like. Permits may also be required for some work environments such as confined spaces, working aloft, near live electrical apparatus and site rehabilitation.

2. Compliance may be required in various jurisdictions relating to currency in First Aid, confined space, lifting and risk safety measures.

Pre-Requisites**Prerequisite Unit(s)****4)****Competencies****4.1)**

Granting competency in this unit shall be made only after competency in the following unit(s) has/have been confirmed.

UEENEEE1 01A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE1 02A Fabricate, dismantle, assemble of utilities industry components

UEENEEE1 05A Fix and secure electrotechnology equipment

UEENEEE1 07A Use drawings, diagrams, schedules, standards, cords and specifications

Prerequisite Unit(s) 4)

UEENEEH1 Repair business equipment faults
03A

Literacy and numeracy skills 4.2)

Participants are best equipped to achieve competency in this unit if they have reading, writing and numeracy skills indicated by the following scales. Description of each scale is given in Volume 2, Part 3 'Literacy and Numeracy'

Reading 4 Writing 4 Numeracy 4

Employability Skills Information**Employability Skills 5)**

This unit contains Employability Skills

The required outcomes described in this unit of competency contain applicable facets of Employability Skills. The Employability Skills Summary of the qualification in which this unit of competency is packaged will assist in identifying Employability Skill requirements.

Elements and Performance Criteria Pre-Content

6) Elements describe the essential outcomes of a competency standard unit

Performance Criteria describe the required performance needed to demonstrate achievement of the element.
Assessment of performance is to be consistent with the Evidence Guide.

Elements and Performance Criteria

| ELEMENT | PERFORMANCE CRITERIA |
|--------------------------------------|---|
| 1 Prepare to find and repair faults. | 1.1 OHS procedures for a given work area are identified, obtained and understood. |
| | 1.2 OHS risk control measures and procedures are followed in preparation for the work. |
| | 1.3 The nature of the fault is obtained from documentation, work supervisor and customer to establish the scope of work to be undertaken. |
| | 1.4 Advice is sought from the work supervisor to ensure the work is co-ordinated effectively with others. |
| | 1.5 Sources of materials that may be required for the work are established in accordance with established procedures. |
| | 1.6 Tools, equipment and testing devices needed to carry out the work are obtained in accordance with established procedures and checked for correct operation and safety. |
| 2 Find and repair faults. | 2.1 OHS risk control measures and procedures for carrying out the work are followed. |
| | 2.2 The need to test or measure live is determined in strict accordance with OHS requirements and when necessary conducted within established safety procedures. |
| | 2.3 Apparatus is checked as being isolated where necessary in strict accordance OHS requirements and procedures. |
| | 2.4 Fault finding is approached methodically drawing on knowledge of office equipment and using measurements of operating parameters and built-in fault indicators referenced to manufacturer's specifications. |
| | 2.5 Equipment components are dismantled where necessary and parts stored to protect them against loss or damage. |

| ELEMENT | PERFORMANCE CRITERIA |
|--|--|
| | 2.6 Faulty components are rechecked and their fault status confirmed. |
| | 2.7 Faulty components are readjusted or replace in accordance with established procedures. |
| | 2.8 Effectiveness of the repaired component is tested in accordance with established procedures. |
| | 2.9 Apparatus is reassembled, finally tested and prepared for return to customer. |
| | 2.10 Unexpected situations are dealt with safely and with the approval of an authorised person. |
| | 2.11 Fault finding and repair activities are carried out efficiently without waste of materials or damage to apparatus and the surrounding environment or services and using sustainable energy practices. |
| 3 Completion and report fault finding and repair activities. | 3.1 OHS work completion risk control measures and procedures are followed. |
| | 3.2 Work area is cleaned and made safe in accordance with established procedures. |
| | 3.3 Written justification is made for repairs to apparatus including components and materials used. |
| | 3.4 Acceptance that the reported fault(s) have been repaired is sought from an appropriate person in accordance with established procedures. |

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

8) This describes the essential skills and knowledge and their level, required for this unit.

Evidence shall show that knowledge has been acquired of safe working practices and finding and repairing faults in high volume office equipment.

All knowledge and skills detailed in this unit should be contextualised to current industry practices and technologies.

KS01-EH121A **and repair**

High volume office equipment fault finding

Evidence shall show an understanding of high volume office equipment fault finding and repair, applying safe working practices and relevant Standards, Codes and Regulations to an extent indicated by the following aspects:

T1. Copier/printer software functions and configuration

- Copier/printer software functions and configuration options
- Device driver software installation and configuration
- Available user function
- Diagnostic software functions and their use
- Fault identification and repair

T2. Business machine transducers

- Function of transducers encompassing:
 - Linear position & velocity
 - Angular position measurement
 - Angular velocity measurement
 - Temperature sensors
 - Humidity sensors
 - Current sensors
 - Piezo sensors
- Temperature sensors types, operating principles and applications - thermocouples, resistance temperature detectors (RTD), thermistors, bimetal temperature sensors and the like.
- Optoelectronics device types, operating principles and applications - photo resistors, photodiodes, phototransistors, LASCR, photovoltaic devices, optocouplers, lasers and the like.

T3. High volume business machine functions and faults

- Operating features of electric motors, relays and solenoids, clutches and tachometers
- Function and operation of feed mechanisms, drive-trains and cleaning processors
- Input accessories, their function and operating principle encompassing:

REQUIRED SKILLS AND KNOWLEDGE

- paper trays
- high capacity bins
- document feeders
- duplex unit
- manual bypass
- coin boxes
- card readers
- raster image processing unit
- Output accessories, their function and operating principle encompassing:
 - sorters
 - staplers
 - collators
 - folders
 - stackers
- fault identification and repair
 - machine faults
 - line faults

T4. Colour photocopiers operating principles

- Principles of colour and colour separation encompassing:
 - Effects of light on the eye
 - Colour principles
 - Colour separation
 - Colour mixing processes
 - Colour Wheel
- Colour separation in colour photocopying encompassing:
 - Three scan process
 - Four scan process
 - Under colour removal
- Principles of colour photocopying
 - Reflected light paths
 - Block diagrams of photocopiers
 - Principles of operation
- Scanning processes of colour photocopiers encompassing:
 - CCD
 - Pre amps
 - Auto gain
 - Image Processing Unit
 - Laser unit

REQUIRED SKILLS AND KNOWLEDGE

- Exposure processes
 - Printing processes of colour photocopiers encompassing:
 - Laser diode unit
 - Polygon mirrors
 - Laser synchronising and detector encompassing:
 - Cylindrical lens
 - Routine maintenance and servicing encompassing:
 - Optics
 - Paper feeds
 - Developer unit
 - Drum unit
 - Belts and rollers
 - Fusing unit
 - fault identification and repair
 - machine faults
 - line faults
- T5. Facsimile machine operating principles
- Sub-system components (i.e. functional blocks) operating parameters encompassing:
 - CCITT standards
 - analogue and digital transmissions
 - transmission process
 - phases of facsimile calls
 - Scanning operations encompassing:
 - single photosensor
 - CCD Operations
 - area image sensors
 - lighting systems
 - optical systems
 - Signal processing encompassing:
 - picture reduction
 - modems
 - Printing processes encompassing:
 - thermal
 - plain paper
 - carbon transfer
 - ink jet
 - Dialing parameters encompassing:

REQUIRED SKILLS AND KNOWLEDGE

- pulse (decadic) dialing
- DTMF
- manual dial
- blind dial, line and dial detect
- redial and listen to dial
- Coding systems encompassing:
 - data compression
 - Modified Hauffman (MH) systems
 - Modified Read (MR) systems
 - Modified Read (MMR) systems
 - “K” factor
 - Error Correction Modes (ECM)
- Operational principles encompassing:
 - transmission
 - reception
 - copying
- Installation, operation, maintenance and servicing procedures encompassing:
 - disassembly and assembly
 - consumable replacement
 - cleaning
 - fault identification and repair
 - machine faults
 - line faults
- Facsimile services encompassing:
 - fax stream
 - duet

Evidence Guide

EVIDENCE GUIDE

9) The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package. .

The Evidence Guide forms an integral part of this unit. It must be used in conjunction with all parts of the unit and performed in accordance with the Assessment Guidelines of this Training Package.

Overview of Assessment 9.1)

Longitudinal competency development approaches to assessment, such as Profiling, require data to be reliably gathered in a form that can be consistently interpreted over time. This approach is best utilised in Apprenticeship programs and reduces assessment intervention. It is the Industry-preferred model for apprenticeships. However, where summative (or final) assessment is used it must include the application of the competency in the normal work environment or, at a minimum, the application of the competency in a realistically simulated work environment. It is recognised that, in some circumstances, assessment in part or full can occur outside the workplace. However, it must be in accord with industry and regulatory policy.

Methods chosen for a particular assessment will be influenced by various factors. These include the extent of the assessment, the most effective locations for the assessment activities to take place, access to physical resources, additional safety measures that may be required and the critical nature of the competencies being assessed.

The critical safety nature of working with electricity, electrical equipment, gas or any other hazardous substance/material carries risk in deeming a person competent. Sources of evidence need to be 'rich' in nature to minimise error in judgment.

Activities associated with normal everyday work influence decisions about how/how much the data gathered will contribute to its 'richness'. Some skills are more critical to safety and operational requirements while the same skills may be more or less frequently practised. These points are raised for the assessors to consider when choosing an assessment method and developing assessment instruments. Sample assessment instruments are included for Assessors in the Assessment Guidelines of this Training Package.

Critical aspects of evidence required to demonstrate competency in this unit 9.2)

Before the critical aspects of evidence are considered all prerequisites shall be met.

Evidence for competence in this unit shall be considered holistically. Each Element and associated performance criteria shall be demonstrated on at least two occasions in accordance with the 'Assessment Guidelines – UEE11'. Evidence shall also comprise:

- A representative body of work performance demonstrated within the timeframes typically expected of the discipline, work function and industrial environment. In particular this shall incorporate evidence that shows a candidate is able to:
 - Implement Occupational Health and Safety workplace procedures and practices, including the use of risk control measures as specified in the performance criteria and range statement
 - Apply sustainable energy principles and practices as specified in the performance criteria and range statement
 - Demonstrate an understanding of the essential knowledge and associated skills as described in this unit. It may be required by some jurisdictions that RTOs provide a percentile graded result for the purpose of regulatory or licensing requirements.
 - Demonstrate an appropriate level of skills enabling employment
 - Conduct work observing the relevant Anti Discrimination legislation, regulations, policies and workplace procedures
- Demonstrated consistent performance across a representative range of contexts from the prescribed items below:
 - Find and repair faults in high volume office equipment as described in 8) and including:

- A Using methodical fault finding techniques.
- B Finding faults efficiently.
- C Remove/adjusting/replacing components without damage.
- D Testing equipment operation.
- E Providing written justification for the repairs and obtain acceptance of repairs.
- F Dealing with unplanned events by drawing on essential knowledge and skills to provide appropriate solutions incorporated in a holistic assessment with the above listed items.

Note:

Successful completion of relevant vendor training may be used to contribute to evidence on which competency is deemed. In these cases the alignment of outcomes of vendor training with performance criteria and critical aspects of evidence shall be clearly identified.

Context of and specific resources for assessment 9.3)

This unit should be assessed as it relates to normal work practice using procedures, information and resources typical of a workplace. This should include:

- OHS policy and work procedures and instructions.
- Suitable work environment, facilities, equipment and materials to undertake actual work as prescribed by this unit.

These should be part of the formal learning/assessment environment.

Note:

Where simulation is considered a suitable strategy for assessment, conditions must be authentic and as far as possible reproduce and replicate the workplace and be consistent with the approved industry simulation policy.

The resources used for assessment should reflect current industry practices in relation to finding and repairing faults in high volume office equipment.

Method of assessment **9.4)**

This unit shall be assessed by methods given in Volume 1, Part 3 'Assessment Guidelines'.

Note:

Competent performance with inherent safe working practices is expected in the industry to which this unit applies. This requires that the specified essential knowledge and associated skills are assessed in a structured environment which is primarily intended for learning/assessment and incorporates all necessary equipment and facilities for learners to develop and demonstrate the essential knowledge and skills described in this unit.

Concurrent assessment and relationship with other units **9.5)**

For optimisation of training and assessment effort, competency development in this unit may be arranged concurrently with unit:

UEENEEH1 Troubleshoot digital sub-systems
12A

UEENEEH1 Troubleshoot amplifiers in an electronic apparatus
13A

UEENEEH1 Develop software solutions for microcontroller based systems
15A

The critical aspects of occupational health and safety covered in unit UEENEEH101A and other discipline specific occupational health and safety units shall be incorporated in relation to this unit.

Range Statement

RANGE STATEMENT

10) This relates to the unit as a whole providing the range of contexts and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

This unit shall be demonstrated by finding and repairing at least four faults in a high volume (40 to 80 ppm) copier and work group Fax machine (12 ppm).

Generic terms used throughout this Vocational Standard shall be regarded as part of the Range Statement in which competency is demonstrated. The definition of these and other terms that apply are given in Volume 2, Part 2.1.

Unit Sector(s)

Not applicable.

Competency Field

| | |
|-------------------------|-------------|
| Competency Field | 11) |
| | Electronics |