

Unit ID: 881

Domain

**ELECTROTECHNOLOGY**

Title:

**Install and test electrical appliances**

Level: 2

**Credits: 4**

### Purpose

This unit standard specifies the competencies required to install and test electrical appliances. It includes competencies to prepare and arrange to install and test electrical appliances, select and terminate electrical cables for a given application, joint electrical cables and install electrical appliance and test electrical appliance installations. This unit standard is intended for those who work in electrotechnology environment.

### Special Notes

1. Entry information:

Prerequisite

- Unit 864 – *Apply safety rules and regulations in an electrotechnology environment* or demonstrated equivalent knowledge and skills.

2. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' specifications and/or company's guidelines and instructions.

3. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which electrical operations are carried out.

4. Glossary of terms:

- '*specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements.
- '*electrical appliances*' including but not limited common domestic appliances such as stoves and hot plates, irons, washing machines and kettles and basic commercial or office appliances.
- '*ISO*' refers to *International Organization for Standards*
- '*SANS*' refers to *South Africa National Standards*

5. Performance of all elements in this unit standard must comply with industry standards.

6. Regulations and legislation relevant to this unit standard include the following:

- Labour Act, No. 11, 2007.
- Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.
- SANS 10142-1
- SANS 10142-2
- ISO 14001

## **Quality Assurance Requirements**

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority. All approved unit standards, qualifications and national assessment arrangements are available on the Namibia Training Authority website [www.nta.com.na](http://www.nta.com.na).

### **Element 1: Prepare and arrange to install and test electrical appliances.**

#### **Range**

Preparation may include but is not limited to scope of work, resources, specifications, work plan, drawings and identification of hazards.

#### **Performance Criteria**

- 1.1 The nature and extent of the electrical installation is determined from job specifications.
- 1.2 Safety and other regulatory requirements to which the electrical installation shall comply are identified, obtained and interpreted.
- 1.3 Circuit diagrams are interpreted according to specific task.
- 1.4 Tools, and test equipment to be used are selected according to specified task and are checked for safe and effective operation.
- 1.5 Circuits are arranged to ensure safe and functional operation of the installation.
- 1.6 Circuits are arranged to comply with technical standards and job specifications and requirements.
- 1.7 Earthing is arranged to comply with the standards and local energy supplier's requirements.

### **Element 2: Select and terminate electrical cables for a given application.**

#### **Range**

Typical applications may include but are not limited to mains cable for an average-size house, fixed wiring supply to a heating or cooking appliance, sub main for small building, lighting circuit, switchboards and single-phase fixed wired appliance. Accessories may include but are not limited to single-phase and three-pin plug and socket, bayonet-cap lamp-holder and Edison-screw lamp-holder.

Cables may include but not limited to tough plastic-sheathed (TPS), mineral-insulated metal-sheathed (MIMS), and conduit wire, neutral-screened (co-axial) cable and steel-wire armoured (SWA).

Tools for cable works may include but are not limited to stripping pliers, cable stripping knife, voltage tester, side-cutting pliers and assorted pliers.

Data may include but are not limited to maximum demand, maximum permissible volt-drop, length of run, class of excess-current protection, grouping and installation method.

### **Performance Criteria**

- 2.1 Type of cable chosen matches the application in terms of operating conditions and environment.
- 2.2 Cable size is determined from given data in accordance with current regulations and standards and manufacturer's data.
- 2.3 Tools for cable works are identified and selected.
- 2.4 Cables are surface mounted (for permanent wiring) using accessories appropriate to the cable type, according to current regulations and standards, and safe and sound practice.
- 2.5 Appliance is confirmed as being isolated from the supply according to industry practice.
- 2.6 Flexible cord is terminated at the appliance in accordance with current regulations and standards, and industry practice.
- 2.7 Termination of cables and conductors meets the requirements of current regulations and standards and installation plans where available.
- 2.8 Terminations are completed in industry-acceptable time-frames.

### **Element 3: Join electrical cables and install electrical appliance.**

#### **Range**

Joining methods may include but are not limited to use of tin, eyelets, cable shoes, ferrules and shrinking nut, bolt, screw terminal, tunnel terminal and crimped lug. Electrical tests may include but are not limited to visual inspection, earth continuity, polarities and insulation resistance tests.

### **Performance Criteria**

- 3.1 Jointing method is matched to the cable in accordance with safe industry practice, current regulations and industry standards using proprietary jointing systems.
- 3.2 Jointing process is carried out in accordance with safe industry practice, current regulations, and industry standards and according to manufacturer's instructions where applicable.

- 3.3 The location, positioning, mounting, and fitting of installation hardware is in accordance with industry practice.
- 3.4 Leads, cabling and/or feeders are installed in accordance with specifications and industry practice.
- 3.5 The appliance is positioned, terminated, configured, and designated in accordance with industry practice.
- 3.6 Inspection confirms that all specified items have been installed in accordance with industry practice.

**Element 4: Test installations of electrical appliance.**

**Performance Criteria**

- 4.1 Tests and adjustments of all component and parts are completed in accordance with industry practice.
- 4.2 Tests confirm that the complete installation operates in accordance with the specifications.
- 4.3 Results are recorded in accordance with specifications and industry requirements.
- 4.4 The operation of the equipment, warranty and service options is understood by the customer.
- 4.5 Support materials are supplied to customer in accordance with contract and enterprise requirements.

**Registration Data**

<b>Subfield:</b>	Electrical Engineering
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