

Unit ID: 881

Domain

ELECTRICAL ENGINEERING - CORE

Title: Install and test single phase electrical appliances

Level: 2

Credits: 4

Purpose

This unit standard is intended for those who install and test single phase electrical appliances. People credited with this unit standard are able to plan and prepare for work; select and terminate electrical cables for a given application; join electrical cables and install electrical appliance; test installations of electrical appliance; and clean-up work area.

This unit standard is intended for those who work in electrical workplace environment.

Special Notes

1. Entry information:

Prerequisite

- *Unit 1157 - Demonstrate basic knowledge of workplace health and safety*

2. To demonstrate competence, at a minimum, evidence is required of install and test single phase electrical appliances. Perform these tasks ensuring correct identification of requirements, selection and use of appropriate processes, tools and equipment and completing all work to specification.

3. 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.

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

5. Glossary of terms

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

6. Performance of all elements in this unit standard must comply with industry standards.
7. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act, No. 11, 2007.
 - Regulations relating to the health & safety of employees at work under Schedule 1 (2) of the Labour Act No.11 of 2007 and all subsequent amendments.
 - SANS 10142-1
 - SANS 10142-2
 - ISO 14001
 - Namibia Electricity Safety Code 2009: Electricity Act No. 4 of 2007

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.

Elements and Performance Criteria

Element 1: Plan and prepare for work

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 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and interpreted.
- 1.2 Safety and other regulatory requirements to which the electrical installation shall comply to are identified, obtained and interpreted.
- 1.3 Circuit diagrams are interpreted according to specific task.

- 1.4 Tools and equipment selected to carry out tasks are consistent with job requirements, checked for serviceability, and any faults are rectified or reported prior to commencement.
- 1.5 Material quantity requirements are calculated in line with plans, specifications and quality requirements.
- 1.6 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations

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

Range

Typical applications may include but 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 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 not limited to stripping pliers, cable stripping knife, voltage tester, side-cutting pliers and assorted pliers.

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

Performance Criteria

- 2.1 Cables are chosen to match the application in terms of operating conditions and environment.
- 2.2 Cable size is determined from given data in accordance with industry regulations and standards and manufacturers' data.
- 2.3 Tools for cable works are selected and used in line with job requirements.
- 2.4 Cables are surface mounted (for permanent wiring) according to industry regulations and safety standards.
- 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 industry regulations and standards, and industry practice.
- 2.7 Cables and conductors are terminated to meet the requirements of industry regulations, 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 not limited to use of tin, eyelets, cable shoes, ferrules and shrinking nut, bolt, screw terminal, tunnel terminal and crimped lug.

Performance Criteria

- 3.1 Jointing methods are matched to the cable in accordance with safe industry practices and industry regulations.
- 3.2 Jointing process is carried out in accordance with safe industry practice, industry regulations and manufacturers' specifications where applicable.
- 3.3 The location, positioning, mounting, and fitting of installation hardware is identified 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 Electrical appliance is inspected in accordance with industry practice.
- 3.7 Circuits are arranged to ensure safe and functional operation of the installation.

Element 4: Test installations of electrical appliance

Range

Electrical tests may include but are not limited to visual inspection, earth continuity, polarities and insulation resistance tests.

Performance Criteria

- 4.1 Tests and adjustments of all component and parts are completed in accordance with industry practice.
- 4.2 Electrical appliance are tested to 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 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.

Element 5: Clean-up work area

Performance Criteria

- 5.1 Work area is cleared, cleaned, restored and secured in line with workplace procedures.
- 5.2 Tools and equipment are cleaned, checked and stored in line with manufacturer specifications and workplace procedures.
- 5.3 Materials and wastes are disposed of, reused, or recycled in accordance with legislation, regulations, codes of practice and job specifications

Registration Data

Subfield:	Electrical Engineering
Date first registered:	18 November 2010
Date this version registered:	23 November 2023
Anticipated review:	23 November 2028
Body responsible for review:	Namibia Training Authority