

Domain	ELECTROTECHNOLOGY	Unit ID: 873
Title:	Design and construct a single phase electrical circuit	
Level: 2		Credits: 3

Purpose

This unit standard specifies the competencies required to design and construct a single phase electrical circuit. It includes knowledge and competency to identify symbols and components, sketch and construct basic single- phase circuits and clean up the workplace after completion. This unit standard is intended for those who work in electrotechnology work 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. Assessment evidence may be collected from a real workplace or an appropriate simulated realistic environment in which electrical operations are carried out.
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. Glossary of terms:
 - '*tools for electrical work*' refers to hand and power tools used for electrical, electronic and instrumentation works.
 - '*specifications*' refer to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements.
 - '*SANS*' refers to South Africa National Standards
 - '*IEC*' refers to International Electrotechnical Commission.
 - '*ISO*' refers to International Organisation for 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.

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: Identify symbols and components in an electrical circuit.

Performance Criteria

- 1.1 Various types of switches are identified according to their symbols.
- 1.2 Various types of protection devices are identified according to their symbols.
- 1.3 Various types of control devices are identified according to their symbols.
- 1.4 Various types of load devices are identified according to their symbols.

Element 2: Sketch a basic electrical circuit diagram.

Range

Electrical circuits may include but are not limited to single phase sub-circuits, single way switching, two ways switching, intermediate switching, switch and relay, rotary switches and socket outlets.

Performance Criteria

- 2.1 Instructions are interpreted according to work site procedures.
- 2.2 Symbols used conform to ISO and IEC standards.
- 2.3 The function of each component is understood and described correctly.
- 2.4 Circuit diagrams are sketched neatly and symmetrically according to instructions.
- 2.5 Circuit diagrams are functional according to instructions.

Element 3: Construct and power-test a single phase circuit.

Performance Criteria

- 3.1 Relevant components are obtained according to diagram.
- 3.2 Components are suitably and correctly connected according to diagram.
- 3.3 Circuit is correctly connected to the power supply according to statutory requirements.
- 3.4 Operation of the circuit is correct according to instructions.

- 3.5 The reason for using over current (overload and short circuit) protection is correctly stated.

Element 4: Clean up workplace after circuit construction works.

Performance Criteria

- 4.1 Work area is cleaned in accordance with house keeping standards.
- 4.2 Ensure that tools are stored in their correct place in accordance with work place practices and manufacturers specifications.
- 4.3 Waste materials are disposed of according to work site procedures, statutory requirements and environmental standards.
- 4.4 Documentation is completed in detail and submitted to meet work site standards and procedures.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	18 November 2010
Date this version registered:	18 November 2010
Anticipated review:	2015
Body responsible for review:	Namibia Training Authority