

Unit ID: 1233

Domain	ELECTRICAL INSTALLATION
Title:	Maintain Direct Current (DC) and Alternating Current (AC) machines
Level: 4	Credits: 8

Purpose

This unit standard is intended for those who maintain Direct Current (DC) and Alternating Current (AC) machines. People credited with this unit standards are able to plan and prepare for work; service Direct Current machines; service Alternating Current machines; and clean-up work area.

This unit standard is intended for those who work as electricians.

Special Notes

1. Entry information:

Prerequisite
 - *Unit 1157 - Demonstrate basic knowledge of workplace health and safety*
2. This unit standard is to be delivered and assessed in the context of electrical installation and operations and should be assessed in conjunction with other relevant technical units selected from this domain.
3. Assessment evidence may be collected from a real workplace or simulated workplace environment in which electrical operations are carried out.
4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' and company guidelines, instructions, and reasonable flat rate time.
5. Glossary of terms:
 - '*Isolation and lockout procedures*' refer to isolating an electrical circuit from the source of supply
 - 'Specifications' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements, national and international standards and legislations
 - 'ISO' refers to International Organization for Standards
 - 'SANS' refers to South African National Standards
 - 'DC machines' refers to Direct current machines
 - 'AC machines' refers to Alternating current machines.

6. Regulations and legislation relevant to this unit standard include the following:
- Labour Act No. 11 of 2007
 - Petroleum Products and Energy Amendment Act No. 2 of 2005
 - National Energy Fund Act of 2000
 - Gas Act (Draft 2b)
 - 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.
 - ISO 14001 (Environmental Management Standard)
 - Electricity Act No.4 of 2007
 - SANS 10142-1 and SANS 10142-2 electrical wiring codes and all subsequent amendments to any of the above.

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 on www.namqa.org and the Namibia Training Authority on www.nta.com.na.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Performance Criteria

- 1.1 Work instructions, including plans, specifications, job cards, quality requirements and operational details are obtained, confirmed and interpreted.
- 1.2 Safety requirements are followed in line with safety plans and policies.
- 1.3 Personal protective equipment is selected in line job and safety requirements.
- 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 Signage and barricade requirements are identified and implemented, where necessary.
- 1.6 Material quantity requirements are calculated in line with plans, specifications and quality requirements.
- 1.7 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Service Direct Current machines

Range

DC machines include but are not limited to DC motors and DC generators.

Performance Criteria

- 2.1 Maintenance schedules is developed in line with workplace procedures and manufacturers' specifications.
- 2.2 DC machine is checked for mechanical damage according to manufacturers' procedures.
- 2.2 DC machine is checked for overheating according to manufacturers' procedures.
- 2.3 DC machine is lubricated with specific lubricants and at specific points according to manufacturer's specifications.
- 2.4 Commutator, brushes and brush gear are checked for wear and tear according to manufacturers' procedures.
- 2.5 All worn and burnt parts are replaced according to manufacturers' procedures.
- 2.6 Winding insulation resistance is checked according to manufacturers' procedures.
- 2.7 Loose connections are tightened according to manufacturers' procedures.
- 2.8 Machine shafts are checked for alignment to couplings according to manufacturers' procedures.
- 2.9 Machines are tested for functionality according to manufacturers' procedures and re-commissioned.

Element 3: Service Alternating Current machines

Range

AC machines include but are not limited to AC generators and AC motors.

Performance Criteria

- 3.1 Maintenance schedules is developed in line with workplace procedures and manufacturers' specifications.
- 3.2 AC machine is checked for mechanical damage according to manufacturers' procedures.

- 3.3 AC machine is checked for overheating according to manufacturers' procedures.
- 3.4 AC machine is lubricated with specific lubricants and at specific points according to manufacturer's specifications.
- 3.5 Slip rings, brushes and brush gear are checked for wear and tear according to manufacturers' procedures.
- 3.6 All worn and burnt parts are replaced according to manufacturers' procedures.
- 3.7 Winding insulation resistance is checked according to manufacturers' procedures.
- 3.8 Loose connections are tightened according to manufacturers' procedures.
- 3.9 Machine shafts are checked for alignment to couplings according to manufacturers' procedures.
- 3.10 Machines are tested for functionality according to manufacturers' procedures and re-commissioned.

Element 4: Clean-up work area

Performance Criteria

- 4.1 Work area is cleared, cleaned, restored and secured in line with workplace procedures.
- 4.2 Tools and equipment are cleaned, checked and stored in line with manufacturer specifications and workplace procedures.
- 4.3 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:	24 July 2014
Date this version registered:	23 November 2023
Anticipated review:	23 November 2028
Body responsible for review:	Namibia Training Authority