

Domain AIR CONDITIONING AND REFRIGERATION**Title: Repair motors as part of air conditioning and refrigeration****Level: 3****Credits: 12****Purpose**

This unit standard specifies the competencies required to rectify faults in appliance motors as part of air conditioning and refrigeration. It includes plan and prepare for work; repair of motors; and perform housekeeping.

This unit standard is intended for those who works as air conditioning and refrigeration artisans.

Special Notes

1. Entry information:

Prerequisite

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

2. To demonstrate competence, at minimum evidence is required to repair one single phase motor and one three phase motor.

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

4. 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.

5. Glossary of terms:

- "*Specifications*" refers to all, or any of the following: manufacturers' specifications and recommendations, workplace specific requirements.
- "*Electrical motors*" refer to single and three phase motors appliance including condenser fan motor and evaporator fan motors. Refers to electrical machine that convert electrical energy into mechanical energy.

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

- Labour Act, No. 11, 2007

- Occupational Health and Safety Regulations Act, No. 18, 1997 and all subsequent amendments.
 - Import and Export control act, 1994.
 - NAMS/ESI LVEIWS 001: ed 1.0 2021
 - NAMS/ESI 002: ed 1.0 2021
 - NAMS 5149-4: 2021 (ISO 5149-4 2014)
 - SANS 10147: 2014
7. The performance of all elements in this unit standard must comply with industry standards.
8. This unit standard applies to single-phase and three-phase air conditioning and refrigeration systems.

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

Tools and equipment may include but are not limited to multimeter, spanners, screw driver, mega meter, socket wrench, stethoscope, bearing pullers, mallet hummer, torque wrench, vernier caliper, micro meter, tachometer, grease gun, and cable knife.

Materials may include but not limited to contactors; electrical cables; glands; stop and start button; and insulation spray.

Performance Criteria

- 1.1 Work instructions including job cards, specifications and operational details are interpreted and confirmed.
- 1.2 Workplace inspection is carried out in line with safety standards.
- 1.3 Safety requirements are applied in line with safety and workplace policies.

- 1.4 Tools and equipment are selected in line with the job requirements.
- 1.5 Material required are selected and obtained in line job specifications.
- 1.6 Calibration requirements for tools, instruments and equipment are carried out in line with job requirements.
- 1.7 Environmental protection requirements are outlined and followed in line with environmental legislative requirements.

Element 2: Repair of motors

Range

Repair may include but not limited to single phase and three phase motors; and alternating current and direct current motor.

Troubleshooting may include but not limited to open circuit, short circuit, incorrect/loose connections, insulation failure, unsafe condition, motor component failure, control circuit failure, and mechanical failures.

Performance Criteria

- 2.1 Procedures and information required for repairing motors are outlined in line with job specifications.
- 2.2 Inspections are carried out in line with job specifications.
- 2.3 Troubleshooting is carried out in line with manufacturers' specifications.
- 2.4 Power Isolation of the motor is carried out in line with the industrial standards.
- 2.5 Repairing is carried out in line with the job specifications.
- 2.6 Commissioning is carried out in line with the job specifications.

Element 3: Perform housekeeping

Range

Work completion details may include but not limited to job card, sign-out form for equipment, and maintenance form.

Performance Criteria

- 3.1 Work area is cleared of waste, cleaned, restored, and secured in line job specifications.

- 3.2 Reusable materials are collected and stored in line with workplace procedures.
- 3.3 Equipment used are cleaned, checked, maintained, and stored in line Job specifications/work instructions.

Registration Data

Subfield:	Electrical Engineering
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Body responsible for review:	Namibia Training Authority

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