

**Unit ID: 599**

**Domain**

**AIR CONDITIONING AND  
REFRIGERATION**

**Title: Service industrial refrigeration systems**

**Level: 4**

**Credits: 4**

**Purpose**

This unit standard specifies the competencies required to service industrial refrigeration systems. It includes diagnosing and rectifying faults. This unit standard is intended for those who work as air conditioning and refrigeration mechanics.

**Special Notes**

1. Entry information:

Prerequisite

- Unit 567 - *Apply health and safety routines in an air conditioning and refrigeration workplace* or demonstrated equivalent knowledge and skills.

2. 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.

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:

- 'ACR' refers to air conditioning and refrigeration systems
- 'specifications' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements
- 'industrial refrigeration' refers to large refrigeration plants for cold storage, quick-freezing, and chilling of foodstuffs and other types of processing of daily products.

5. 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.

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

7. 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](http://www.nta.com.na).

### **Elements and Performance Criteria**

#### **Element 1: Plan and prepare for work.**

##### **Range**

Air conditioning and refrigeration service hand tools may include but are not limited to tools for turning, special spanners, swage and fare tools, tools for gripping and holding tools for hammering and driving, tools for cutting and forming, tools for pulling and pushing, measuring tools, bending tools and measuring instruments.

Air conditioning and refrigeration service power tools may include but are not limited to air blow gun, drill machine, arc welding machine, and grinder.

Equipment may include but are not limited to oxy-acetylene gas welding set, charging station/manifold gauges, recovery machine and vacuum pump.

##### **Performance Criteria**

- 1.1 Work instructions, including job cards, specifications and operational details are obtained, confirmed and applied.
- 1.2 Workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements is carried out.
- 1.3 Safety requirements are followed in line with safety plans and policies.
- 1.4 Equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults rectified or reported prior to commencement.
- 1.5 Material requirements are identified and obtained in line with job card and/or specifications.

- 1.6 Materials are safely handled and located ready for use in line with workplace procedures.
- 1.7 Technical and/or calibration requirements for tools and equipment are sourced and implemented in line with workplace procedures.
- 1.8 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

## **Element 2: Diagnose faults in industrial refrigeration systems.**

### **Range**

Diagnose may include but is not limited to testing.

Operational tests may include but are not limited to electrical circuit's continuity and mode, conductor and insulation resistance, voltage, current draw and phase sequence.

### **Performance Criteria**

- 2.1 Procedures and information required for diagnosing and rectifying faults are identified and sourced in line with workplace procedures.
- 2.2 Pressure drop and temperatures are observed and tested in line with manufacture and workplace procedures.
- 2.3 Electrical circuits are tested, current, voltage, insulation resistance are measured and recorded in line with workplace procedures.

## **Element 3: Rectify common faults in industrial refrigeration systems.**

### **Performance Criteria**

- 3.1 Service activities are conducted in line with manufactures and workplace procedures.
- 3.2 Faults are rectified in line with manufactures and workplace procedures.
- 3.3 Relocated/repared components are reassembled in line with manufactures and workplace procedures.

#### **Element 4: Complete work and clean up.**

##### **Range**

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

##### **Performance Criteria**

- 4.1 Work is completed and appropriate personnel notified in line with workplace procedures.
- 4.3 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 4.4 Reusable material is collected and stored in line with workplace procedures.
- 4.5 Equipment used is cleaned, checked, maintained and stored in line with workplace procedures.
- 4.6 Work completion details are finalised in line with workplace procedures.

#### **Registration Data**

<b>Subfield:</b>	Mechanical Engineering
<b>Date first registered:</b>	27 May 2010
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<b>Body responsible for review:</b>	Namibia Training Authority