	Unit ID: 579
Domain	**AIR CONDITIONING AND REFRIGERATION**
Title:	**Replace refrigeration system components**
Level: 2	**Credits: 10**

Purpose

This unit standard specifies the competencies required to replace refrigerant components. It includes operate a refrigeration manifold gauge, pumping down a refrigeration unit and recovering refrigerant. 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:

   - 'specifications' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements.

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.

Elements and Performance Criteria

Element 1: Plan and prepare for work.

Range

Tools and equipment may include but are not limited to standard tool box multimeter, spanners, screw drivers, manifold gauges, ratchet wrench, side cutter, water pump pliers, shifting.

Materials may include but are not limited to any material required for replacing specific components.

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 accordance with safety plans and policies.

1.4 Tools and 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 accordance 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: Operate a refrigeration manifold gauge.

Performance Criteria

2.1 Procedures and information required for operating a refrigeration manifold gauge are identified and sourced in line with workplace procedures.

2.2 Operating procedures for refrigeration manifold gauge are implemented in line with work place procedures.

2.3 Procedures for fitting refrigeration gauge to the system with service and schraeder valves are implemented in line with workplace procedures.

Element 3: Pump down a refrigeration unit.

Range

Equipments may include but are not limited to manifold gauge, refrigeration service tools, leak testing equipments, safety goggle and operating refrigeration unit.

Performance Criteria

3.1 Procedures and information required for pumping down a refrigeration unit are identified and sourced in line with workplace procedures.

3.2 Pump down procedures are implemented in line with workplace procedure.

3.3 Components are replaced in line with workplace procedures.

3.4 The system is return to normal operation after the replacements of components.

Element 4: Recover refrigerant.

Range

Equipments may include but are not limited to refrigerant recovery, connection equipment and service tools.

Performance Criteria

4.1 Procedures and information required for recovering refrigerant are identified and sourced in line with workplace procedures.

4.2 Recovery procedures are implemented in line with workplace procedures.

4.3 Refrigerant is stored in line with workplace procedures.

Element 5: Replace components.

Range

System components may include but is not limited to driers, sight glass, commercial/industrial compressor, and pressure switch, evaporator fan motor, condenser fan motor, solenoid valve, thermostat, condensing unit ,defrost timer, and expansion valve.

For assessment purposes evidence is required to replace any (3) three system components.

Performance Criteria

5.1 Procedures and information required for replacing a component are identified and sourced in line with workplace procedures.

5.2 System component is replaced in line with workplace procedures.

5.3 System is leak tested and returned to normal operation.

Element 6: Complete work and clean up.

Range

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

Performance Criteria

6.1 Work is completed and appropriate personnel notified in line with workplace procedures.

6.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.

6.3 Reusable material is collected and stored in line with workplace procedures.

6.4 Equipment used is cleaned, checked, maintained and stored in line with workplace procedures.

6.5 Work completion details are finalised in line with workplace procedures.

Registration Data

Subfield:	Mechanical Engineering
Date first registered:	27 May 2010
Date this version registered:	27 May 2010
Anticipated review:	2014
Body responsible for review:	Namibia Training Authority