Unit ID: 574

Domain **AIR CONDITIONING AND REFRIGERATION**

Title: **Evacuate and charge air conditioning and refrigeration systems**

Level: 2 **Credits: 4**

Purpose

This unit standard specifies the competencies required to evacuate and charge air conditioning and refrigeration system. It includes evacuating, charging and leak testing refrigeration systems. 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 system'* refers to air conditioning and refrigeration systems
   - *'specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements.
   - *'evacuate'* refers to the process of removing foreign objects. This include moisture, and non condensable gases
   - *'vacuum'* means a condition in a closed system where the pressure is significantly lower than atmospheric pressure.

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 equipments may include but are not limited to vacuum pump, manifold gauges, ratchet wrench and refrigerant cylinder.

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 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 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 accordance with environmental legislative requirements.

Element 2: Evacuate air conditioning and refrigeration system.

Range

Evacuation equipments may include but are not limited to vacuum pumps, refrigerant recovery system and manifold gauges. Evacuation includes the recovery of the refrigerant.

Tools may include but are not limited to ratchet wrench.

Performance Criteria

2.1 Procedures and information required for evacuating ACR systems are identified and sourced in line with workplace procedures.

2.2 Personal protective clothing and equipment is used in line with legislative requirement and workplace procedure.

2.3 Evacuation equipment is connected to system's pressure fittings in line with manufacture's and workplace procedures.

2.4 Evacuation equipment is activated, refrigerant is recovered and pressure gauges are observed to determine depressurised system in line with manufacture's and workplace procedures.

2.5 Evacuation equipment is disconnected in line with manufactures' and workplace procedures.

Element 3: Charge air conditioning and refrigeration system.

Range

Refrigerant may include but is not limited to chlorofluorocarbons (CFC) free refrigerants.

Chlorofluorocarbons (CFCs) refrigerants are strictly not recommended.

Tools and equipment may include but are not limited to charging station or gauges, ratchet wrench.

Performance Criteria

3.1 Procedures and information required for charging ACR system are identified and sourced in line with workplace procedures.

3.2 Charging equipment is activated to pull deep vacuum in line with manufactures' and workplace procedures.

3.3 System is charged with correct refrigerant in line with manufactures' specifications.

3.4 Final performance test is carried out and compared with manufactures' specifications.

Element 4: Leak test air conditioning and refrigeration system.

Range

Leak test equipment may include but are not limited to electronic leak detector, soapy water leak detector and halide torch leak detector.

Performance Criteria

4.1 Procedures and information required for leakage testing ACR systems are identified and sourced in line with workplace procedures.

4.2 Suitable leak test equipment is selected in line with industry standards.

4.3 Leak test equipment is activated and/or prepared to detect leaks in line with workplace procedures.

4.4 Leak test equipment is disconnected in line with manufactures' and workplace procedures

Element 5: Complete work and clean up.

Range

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

Performance Criteria

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

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

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

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

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

Registration Data

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