

Domain**AIR CONDITIONING AND
REFRIGERATION****Title:****Draw and interpret electrical wiring as
part of air conditioning and refrigeration
operations****Level: 2****Credits: 6****Purpose**

This unit standard specifies the competencies required to draw and interpret electrical wiring. It includes procedures for reading, interpreting and drawing basic electrical circuit diagram and/or symbols used in air conditioning 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:
 - '*specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, workplace specific requirements
 - 'ACR' refers to air conditioning and refrigeration systems.
4. 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 pencils in various sizes (0.35-0.7), eraser, work book and ruler.

Material may include but are not limited to white blank or grid paper in A3 or A4 format.

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: Read and interpret electrical circuit diagram and/or symbols used in ACR systems.

Range

Electrical circuit diagrams and their common symbols may include but are not limited to devices and components such as conductor connecting devices; resistor, capacitor, switches (push buttons) fuses, circuit-breakers, relays, contactors overloads, and displays; fan pump and refrigeration components symbols for valves, thermostats, timer, compressor and pressure switch and power supplies components symbols such as cell, battery, direct current (DC) supply, alternating current (AC) supply, earth(ground); out put devices such as indicating lamps, heater, inductor, solenoid, coil, motor, motor windings, transformer windings, meters device such as voltmeter, Ammeter and ohmmeter

Colour codes are not limited to components such as resistors and capacitors codes and cables.

Performance Criteria

- 2.1 Procedures and information required for reading and interpreting electrical circuit diagrams are identified and sourced in line with workplace procedures.
- 2.2 Electrical circuit diagrams and their common symbols are interpreted in line with workplace procedures.
- 2.3 Cable and components colour codes are interpreted in line with workplace procedures.
- 2.4 Electrical circuit diagrams are identified in line with workplace procedures.

Element 3: Draw electrical circuit diagram and/or symbols used in ACR systems.

Performance Criteria

- 3.1 Procedures and information required for drawing electrical circuit diagrams and symbols used in air conditioning and refrigeration systems are identified and sourced in line with workplace procedures.
- 3.2 Components symbols are drawn and interpreted with regard to refrigeration systems.
- 3.3 Electrical circuit are drawn in line with manufacture specifications and workplace procedures.

- 3.4 Thorough explanation of circuit operation is given in line with workplace procedures.

Element 4: 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

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

Registration Data

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