

**Unit ID: 575**

**Domain**

**AIR CONDITIONING AND  
REFRIGERATION**

**Title:**

**Apply basic oxy-acetylene welding  
techniques used in air conditioning and  
refrigeration mechanics**

**Level: 2**

**Credits: 5**

**Purpose**

This unit standard specifies the competencies required to apply basic oxy-acetylene welding techniques used in air conditioning and refrigeration mechanics. It includes assembling and setting up welding equipment, and performing routine welding using fuel gas process. This unit standard is intended for those who work as air conditioning and refrigeration mechanics.

**Special Notes**

1. Entry information:

Prerequisite

- Unit 567 - *Apply safety rules and regulations in an air conditioning and refrigeration mechanics workshop* or demonstrated equivalent skills and knowledge.

2. To demonstrate competence, at a minimum, evidence is required of safely performing two given welding tasks using the gas fuel process. The first welding task involves flat position bead welding with filler rod using 150 mm continuous length on a piece of low carbon steel with the dimensions of 50 x 3 x 150 mm. The second welding task involves vertical position welding on a piece of sheet metal with the dimensions of 50 x 1.6 x 150 mm. In performing these tasks ensure correct identification of requirements and finishing of the tasks, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.

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

4. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' guidelines and instructions.

5. Glossary of terms:

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

6. 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

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

## **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 on [www.nta.com.na](http://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 acetylene and oxygen cylinders, regulators, welding hoses, check valves (non-return valves), flash back arrestors, welding torches, nozzles and filler rods.

Consumable materials are to include but are not limited to low carbon steel sheet metal and flux,

Protective equipment may include but are not limited to welding goggle, protective clothing, safety boots, gloves and ear plugs.

#### **Performance Criteria**

- 1.1 Work instructions, including repair order forms, 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 that are consistent with the requirements of the job, are 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 appropriate to the work application are identified, obtained, prepared, safely handled and located, ready for use.
- 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: Assemble and set up welding equipment.**

### **Range**

Setting up may include the correct connection of hoses, blowpipes, regulators, cylinder valves, pressure regulators, flashback arrestors, nozzles and correct settings of gas mixtures.

### **Performance Criteria**

- 2.1 Procedures and information required for assembling and setting up welding equipments are identified and sourced in line with workplace procedures.
- 2.2 Protective clothing and equipment are worn in line with safety procedures.
- 2.3 Welding equipment including cylinders and regulators are assembled and set up safely and correctly in line with standard and workplace procedures.
- 2.4 Nozzles and consumables are selected against job requirements and welding procedures, in line with standard operating procedures.

## **Element 3: Perform routine welding using fuel gas process.**

### **Range**

Prescribed procedure is limited to forehand welding (flat position welding and vertical position welding).

### **Performance Criteria**

- 3.1 Procedures and information required for performing routine welding using fuel gas process are identified and sourced in line with manufactures and workplace procedures.
- 3.2 Weld is undertaken safely in line with workplace procedures.
- 3.3 Welds are cleaned in line with standard operating and workplace procedures.

## **Element 4: Braze tubes.**

### **Range**

Brazing method may include but is not limited to brass, silver or copper brazing.

Tools and equipment may include but are not limited to oxygen and acetylene cylinders, oxy-acetylene hoses and gauges, welding torch, flint gun, oxygen spanner, welding torch tips, heat pliers, and safety goggle.

Materials are not limited to silver, brass, copper rods and flux.

### **Performance Criteria**

- 4.1 Procedures and information required for setting up oxy-acetylene welding equipment is identified and sourced in line with workplace procedures.

- 4.2 Oxy-acetylene welding equipment is set up in line with workplace procedures.
- 4.3 Tubes are brazed using different rods in line with workplace procedures.

**Element 5: 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**

- 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**

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