

Domain	PLUMBING	Unit ID: 455
Title:	Apply basic oxy-acetylene welding techniques as part of plumbing operations	
Level: 2		Credits: 4

Purpose

This unit standard specifies the competencies required to apply basic oxy-acetylene welding techniques as part of plumbing operations. It includes planning and preparing for work, preparing materials for welding, assembling and setting up welding equipment, performing routine welding using the oxy-acetylene process, completing work and cleaning up the work area.

Special Notes

1. Entry information:

Prerequisite

- 434 - *Apply safety rules and regulations in plumbing operations* or demonstrated equivalent knowledge and skills.

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. These tasks should be performed ensuring 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 plumbing 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. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act, No. 6, 1992
 - Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.

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.

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation may include but are not limited to workplace inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

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, welding tips and filler rods.

Materials are to include but are not limited to low carbon steel and sheet metal.

Performance Criteria

- 1.1 Work instructions, including repair order forms, specifications and operational details are obtained, confirmed and applied.
- 1.2 Safety requirements are followed in line with safety plans and policies.
- 1.3 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.
- 1.4 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located, ready for use.
- 1.5 Environmental protection requirements are identified and applied in line with environmental plans and regulatory obligations.

Element 2: Prepare materials for welding

Range

Preparation of materials may include but is not limited to preheating, setting up jigs, fixtures and clamps.

Performance Criteria

- 2.1 Weld requirements are determined in line with job specifications.
- 2.2 Material is cleaned and prepared using appropriate tools and techniques in line with standard operating procedures.

Element 3: Assemble and set up welding equipment and materials

Range

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

Performance Criteria

- 3.1 Welding equipment including cylinders and regulators are identified.
- 3.2 Welding equipment is assembled and set up in line with standard operating procedures.
- 3.3 Welding tips, settings and consumables are selected against job requirements and welding procedures in line with standard operating procedures.

Element 4: Perform routine welding using fuel gas process

Range

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

Performance Criteria

- 4.1 Weld is undertaken safely and in line with prescribed procedures.
- 4.2 Welds are cleaned in line with standard operating procedures.
- 4.3 Welds are inspected for faults and identified faults are rectified.

Element 5: Complete work and clean up

Range

Work completion details may include but are not limited to work schedule or appointment sheet 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 Tools and equipment are cleaned, checked, maintained and stored in line with workplace procedures.
- 5.5 Work completion details are finalised in line with workplace procedures.

Registration Data

Subfield:	General Construction
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