

Domain	METAL FABRICATION-CORE	Unit ID: 242
Title:	Weld aluminium using the manual arc welding process in the down hand position	
Level: 3		Credits: 4

Purpose

This unit standard specifies the competencies required to weld aluminium using the manual arc welding process in the down hand position. It includes the preparation of materials and equipment, welding work pieces in the down hand position, post weld inspection as well as completion of work and cleaning up. This unit standard is intended for those who work as welders and boilermakers.

Special Notes

1. Entry information

Prerequisite:
 - *Unit 228* - Apply safety rules and regulations in a metal fabrication work environment or demonstrated equivalent knowledge and skills.
2. To demonstrate competence, at a minimum, evidence is required of performing one butt-joint, one T-joint and one lap joint aluminium weld in the down hand position. 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 specifications.
3. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which metal fabrication operations are carried out.
4. Performance of all elements in this unit standard must comply with manufacturers' specifications and workplace specific requirements.
5. '*Specifications*' refers to any or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.
6. Materials are limited to aluminium with a thickness of 3mm.
7. Regulations and legislation relevant to this unit standard include the following:
 - Labour Act 6 of 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: Prepare materials and equipment

Range

Test procedures may include voltage drop, amperage setting, earthing, electrode and wire conductivity, electrode flux condition.

Preparation of materials includes pre-heating, setting up jigs, fixtures and clamps.

Performance Criteria

- 1.1 Weld requirements are identified from specifications and drawings.
- 1.2 Personal protective clothing and equipment is selected and inspected in accordance with workplace procedures.
- 1.3 Material is selected, prepared and aligned in accordance with job requirements.
- 1.4 Welding equipment is assembled and set up safely and in accordance with workplace procedures and manufacturers' specifications.
- 1.5 Welding machine settings and electrodes are identified against predetermined specifications and welding procedures.
- 1.6 Test runs are undertaken and verified in accordance with specifications.

Element 2: Weld aluminium in the down hand position

Performance Criteria

- 2.1 Risks associated with manual arc welding are identified and minimised prior to commencing work.
- 2.2 Personal protective equipment is used in accordance with workplace procedures.
- 2.3 Distortion prevention measures are identified and applied as required and appropriate action to prevent distortion is taken.

- 2.4 Equipment start up procedure is undertaken in accordance with manufacturers' specifications.
- 2.5 Materials are welded to specifications in accordance with workplace procedures.

Element 3: Conduct post weld inspection

Range

Visual inspection of work pieces includes but is not limited to metal control, penetration, undercutting and porosity.

Performance criteria

- 3.1 Welds are cleaned in accordance with workplace procedures.
- 3.2 Welds are visually inspected for correctness and quality in accordance with specified method.

Element 4: Complete work and clean up

Performance Criteria:

- 4.1 Work is completed and appropriate personnel notified in accordance with worksite procedures.
- 4.2 Work area is cleared of waste, cleaned, restored and secured in accordance with worksite procedures.
- 4.3 Tools and equipment are cleaned, checked, maintained and stored in accordance with worksite procedures.
- 4.4 Work completion details are finalised in accordance with worksite procedures.

Registration Data

Subfield:	Mechanical Engineering
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