



Australian Government

Department of Education, Employment and Workplace Relations

MEM05016C Perform advanced welding using manual metal arc welding process

Release: 1

MEM05016C Perform advanced welding using manual metal arc welding process

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers preparing materials, selecting and setting up the welding equipment, carrying out advanced manual metal arc welding (MMAW), inspecting for and correcting defects, and maintaining the weld records.
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Application of the Unit

Application of the unit	<p>This unit applies to welds associated with a range of structural sections and/or plate and/or pipe for general fabrication. Weld quality would typically conform to Australian Standard 1554 Structural Purpose, Bureau Det Norse Verticas or equivalent.</p> <p>Where advanced manual thermal cutting, gouging and shaping is carried out, Unit MEM05008C (Perform advanced manual thermal cutting, gouging and shaping) should also be selected.</p> <p>Band: A Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05007C	Perform manual heating and thermal cutting
	MEM05012C	Perform routine manual metal arc welding
	MEM05015D	Weld using manual metal arc welding process
	MEM05051A	Select welding processes
	MEM05052A	Apply safe welding practices
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare welding materials and equipment	1.1. Welding equipment is prepared. 1.2. Welding equipment appropriate to task requirements is assembled and adjusted correctly and safely. 1.3. Materials are prepared to achieve the required weld specification.
2. Weld joints to code requirements using MMAW	2.1. Weld requirements are interpreted correctly. 2.2. Welds are deposited correctly to specifications. 2.3. Appropriate distortion prevention measures are selected for the weld type and material and distortions are rectified as required.
3. Assess weld quality and rectify faults	3.1. Weld joints are visually inspected against specifications. 3.2. Defects are removed using appropriate methods for the given task. 3.3. Weld records are correctly completed and maintained.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- welding to conform to Australian Standard 1554 Structural Purpose, Bureau De Norske Veritas or equivalent
- interpreting weld requirements and specifications
- entering information onto proformas and standard workplace forms
- interpreting technical drawings and weld specifications relating to advanced MMAW
- using hand and power tools to prepare and weld material using MMAW
- using measurement and numeracy skills relating to advanced MMAW and preparation
- selecting equipment and consumables appropriate to the task
- using visual identification of faults/defects

Required knowledge

REQUIRED SKILLS AND KNOWLEDGE

Look for evidence that confirms knowledge of:

- in-depth knowledge of the properties and characteristics of a wide range of materials
- requirements to conform to Australian Standard 1554 Structural Purpose, Bureau Det Norse Verticas or equivalent
- weld procedures and requirements
- different welder identification systems such as numbering, bar coding, paint coding, letter stamps
- safety requirements
- safe welding practices
- use and application of personal protective equipment for MMAW

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to prepare materials, select and set up the welding equipment, carry out advanced MMAW, inspect for and correct defects, and maintain the weld records. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing advanced welding using manual metal arc welding process (MMAW), or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures,

EVIDENCE GUIDE

	product and manufacturing specifications, codes, standards, manuals and reference materials.
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EVIDENCE GUIDE**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Welding equipment	AC or DC welding machines, settings, electrodes and related equipment
Materials	Materials used would include low carbon, cast iron, stainless and low alloy steel
Prepared	Preparation of materials may include preheating, setting up of jigs, fixtures, clamps, etc., joint preparation e.g. bevelling
Welds	Welds would be fillet and butt in all positions
Distortion prevention measures	Distortion prevention may include preheating, setting up of jigs, fixtures, clamps, etc.
Defects	Porosity, slag inclusions, discontinuities, lack of penetration, undercut
Appropriate methods	Oxy acetylene and air arc equipment and grinding devices
Weld records	Proformas and other standard workplace forms

Unit Sector(s)**Unit sector**

Co-requisite units

Co-requisite units		

Competency field

Competency field	Fabrication
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