



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM05045B Perform pipe welds to code standards using manual metal arc welding process**

**Release: 1**

## MEM05045B Perform pipe welds to code standards using manual metal arc welding process

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers preparing and producing pipe welds to code standards using manual metal arc welding (MMAW).
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit applies to MMAW to code standard carried out using a range of materials. Welds in this unit are associated with high quality fabrications. Butt welds in pipe with the axis horizontal, vertical and/or askew would be applied to meet Australian Standards 1210, AS 4140, ASME IX or equivalent. The unit, together with Unit MEM05026C (Apply welding principles), may satisfy the requirements of AS 1796 Certificates 2 and 4.</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><b>Band: A</b> <b>Unit Weight: 6</b></p>
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### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Prerequisite units		
<b>Path 1</b>	MEM05007C	Perform manual heating and thermal cutting
	MEM05012C	Perform routine manual metal arc welding
	MEM05015D	Weld using manual metal arc welding process
	MEM05016C	Perform advanced welding using manual metal arc welding process
	MEM05026C	Apply welding principles
	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

<b>Employability skills</b>	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. Maintain welding equipment	1.1. Routine maintenance is performed on welding equipment.
2. Prepare welding materials and equipment for MMAW pipe welding to code standards	2.1. Weld requirements for MMAW welding to code standards are determined. 2.2. Welding equipment is set up correctly. 2.3. Materials are prepared to produce pipe weld to code standard.
3. Weld pipe using MMAW to procedure specifications	3.1. Materials are welded as per weld procedure specification.
4. Ensure weld quality	4.1. Discontinuities are rectified to ensure conformance to code requirements. 4.2. Weld records are maintained in accordance with standard operating procedures.

## Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit.
<b>Required skills</b>
Look for evidence that confirms skills in: <ul style="list-style-type: none"> <li>• depositing welds to procedure requirements.</li> <li>• determining weld outcomes, consumables and settings from welding procedure specification</li> <li>• interpreting technical drawings and weld specifications for welding to code standards using MMAW</li> <li>• using hand and power tools to prepare and weld materials to code standard</li> <li>• using measurement and numeracy skills for welding to code standards</li> <li>• using language and literacy skills to enable completion of weld records</li> </ul>
<b>Required knowledge</b>
Look for evidence that confirms knowledge of: <ul style="list-style-type: none"> <li>• requirements to produce welds to quality of AS 1210, AS 4140, ASME IX or</li> </ul>

## **REQUIRED SKILLS AND KNOWLEDGE**

equivalent

- safe welding practices
- use and application of personal protective equipment for MMAW
- knowledge of appropriate standards or codes
- methods for preparing pipe for code standard welding
- pre-welding and post-welding heating methods and requirements for pipe welding to code standard
- requirements for maintaining weld records to code standard
- hazards and control measures associated with welding, including housekeeping

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<p><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to perform pipe welds to code standards using MMAW process. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>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.</p>
<p><b>Context of and specific resources for assessment</b></p>	<p>This unit may be assessed on the job, off the job or a combination of both. Where assessment occurs off the job, i.e. the candidate is not in productive work, 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.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with the preparation and production of welds or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p><b>Method of assessment</b></p>	<p>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, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>

**EVIDENCE GUIDE**

<b>Guidance information for assessment</b>	
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**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.

<b>Routine maintenance</b>	Ensuring leads, hand pieces etc. are in serviceable condition, and correct current carrying capacity
<b>Prepare welding materials</b>	Preheating, setting up of jigs, fixtures, clamps, etc.
<b>Prepared</b>	Flame cut and ground or machined
<b>Materials</b>	Carbon/manganese steel, stainless steel and low alloy steel materials, etc.

**Unit Sector(s)**

<b>Unit sector</b>	
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**Co-requisite units**

<b>Co-requisite units</b>	



## Competency field

Competency field	Fabrication
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