



Australian Government

MEM05045 Perform pipe welds to code standards using manual metal arc welding process

Release: 2

MEM05045 Perform pipe welds to code standards using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05045 Perform pipe welds to code standards using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05045B Perform pipe welds to code standards using manual metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to prepare and produce pipe welds to code standards using manual metal arc welding (MMAW) on a range of materials.

Butt welds in pipe with the axis horizontal, vertical and/or askew would be applied to meet AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent. The unit, together with unit MEM05026 Apply welding principles, may satisfy the requirements of AS 1796-2001 (R2016) Certification of welders and welding supervisors, Certificates 2 and 4.

Where advanced manual thermal cutting, gouging and shaping is required unit MEM05008 Perform advanced manual thermal cutting, gouging and shaping should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: B

Unit Weight: 6

Pre-requisite Unit

MEM05007	Perform manual heating and thermal cutting
MEM05012	Perform routine manual metal arc welding
MEM05015	Weld using manual metal arc welding process
MEM05016	Perform advanced welding using manual metal arc welding process
MEM05026	Apply welding principles
MEM05051	Select welding processes

MEM05052	Apply safe welding practices
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations

Competency Field

Fabrication

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Prepare welding materials and equipment for MMAW pipe welding to code	2.1	Prepare materials to produce pipe weld to code standard
		2.2	Perform routine maintenance on welding equipment
		2.3	Set up welding equipment

Elements describe the essential outcomes.

standards

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|---|-----|---|
| 3 | Weld pipe using MMAW to procedure specifications | 3.1 | Weld materials in accordance with weld procedure specification |
| | | 3.2 | Rectify discontinuities to ensure compliance to code requirements |
| | | 3.3 | Maintain weld records according to SOPs |

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Routine maintenance includes the following:

- ensuring leads and hand pieces are in good condition and the correct current carrying capacity

Preparation includes one (1) or more of the following:

- flame cut and ground or machined
- pre-heating
- setting up of jigs, fixtures and clamps

Materials include one (1) or more of the following:

- carbon/manganese steel
- stainless steel
- low alloy steel

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05045 Perform pipe welds to code standards using manual metal arc welding process (Release 1).

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM05045 Perform pipe welds to code standards using manual metal arc welding process

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications from drawings, sketches and verbal or written job instructions for performing pipes welds using manual metal arc welding (MMAW) to code standards
- cleaning and preparing materials for welding to specifications
- setting up welding equipment, including performing routine maintenance
- consistently weld materials to specifications
- rectifying any discontinuities
- completing and maintaining weld records related to MMAW to code standards onto standard workplace forms.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe welding practices and procedures and use of personal protective equipment (PPE)
- requirements to produce welds to quality of AS 1210-2010 Pressure vessels, AS 4041-2006 (R2016) Pressure piping, and American Society of Mechanical Engineers (ASME) IX or equivalent
- relevant 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.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing pipe welds to code standards using MMAW process at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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