



Australian Government

MEM05016 Perform advanced welding using manual metal arc welding process

Release: 2

MEM05016 Perform advanced welding using manual metal arc welding process

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05016 Perform advanced welding using manual metal arc welding process (Release 1).

Release 1. Supersedes and is equivalent to MEM05016C Perform advanced welding using manual metal arc welding process.

Application

This unit of competency defines the skills and knowledge required to carry out advanced welding using manual metal arc welding (MMAW).

Welds are associated with a range of structural sections and/or plate and/or pipe for general fabrication. Weld quality would typically conform to AS 1554 Structural Purpose or equivalent.

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: A

Unit Weight: 4

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
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 materials for welding	2.1	Prepare materials to achieve the required weld requirements
		2.2	Assemble/align materials to specification, where required
3	Select, assemble and set up welding equipment and consumables	3.1	Identify and select welding equipment and electrodes, accessories and consumables appropriate to the material
		3.2	Assemble and set up AC or DC welding equipment

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
4	Minimise and rectify distortion	4.1	Apply appropriate distortion prevention measures
		4.2	Rectify any distortion using appropriate techniques
5	Weld joints to specifications using MMAW	5.1	Ensure weld deposit is to specifications
		5.2	Clean joints to specifications
6	Ensure weld conformance	6.1	Inspect weld joints visually for conformance to specifications
		6.2	Rectify any weld defects with minimum loss of sound metal using correct techniques and tools
		6.3	Complete weld records, where required

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.

Welds include the following:

- fillet and butt welds carried out in all positions

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

- low carbon, stainless and low alloy steel

Preparation includes one (1) or more of the

- pre-heating
- setting up of jigs
- fixtures, clamps

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.

following:

- joint preparation e.g. bevelling

Distortion prevention measures include one (1) or more of the following:

- pre-heating
- setting up of jigs
- fixtures and clamps

Rectify includes the use of one (1) or more of the following:

- oxy acetylene
- air arc equipment
- grinding devices

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

- porosity
- slag inclusions
- discontinuities
- lack of penetration
- undercut

Unit Mapping Information

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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 MEM05016 Perform advanced welding 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 advanced welding using manual metal arc welding process (MMAW) to Australian Standard 1554 Structural Purpose
- selecting appropriate weld and joint preparation methods
- consistently weld materials to AS 1554 Structural Purpose or equivalent using AC or DC welding machines and electrodes while preventing distortion
- rectifying any defects
- completing and maintaining weld records related to MMAW Structural Purpose 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)
- properties and characteristics of low carbon, stainless and low alloy steel
- requirements to conform to AS 1554 Structural Purpose or equivalent
- weld specifications and requirements
- different welder identification systems, including numbering, bar coding, paint coding and letter stamps.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced welding 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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