



Australian Government

MEM05078 Apply welding principles

Release: 1

MEM05078 Apply welding principles

Modification History

Release 1. Unit code changed. Changes to prerequisites, elements and performance criteria, performance evidence and knowledge evidence. Supersedes and is not equivalent to MEM05026 Apply welding principles.

Application

This unit of competency has been developed for post trade engineering fabrication training and the recognition of post trade skills in applying welding principles to welding that is generally associated with the application of one of the MEM Manufacturing and Engineering Training Package units satisfying AS 1796 Certification of welders and welding supervisors, or equivalent.

It defines the skills and knowledge required to review job specifications requiring coded welding and plan for the welding preparation, sequencing and set up of welds required to satisfy AS 1796 Certification of welders and welding supervisors. The unit includes knowledge of welding terms, codes and symbols and set up requirements for a range of materials and processes as defined in the unit in conjunction with its prerequisites.

Where metallurgical skills and knowledge to support coded welding, welding supervision, or welding inspection are required, the unit MEM05061 Apply basic metallurgy principles to welding applications must be selected.

This unit must be selected in combination with one of the units satisfying the AS 1796 Certification of welders and welding supervisors or equivalent. These units include:

- MEM05079 Perform welds to code standards using flux core arc welding process
- MEM05080 Perform welds to code standards using gas metal arc welding process
- MEM05081 Perform welds to code standards using gas tungsten arc welding process
- MEM05082 Perform pipe welds to code standards using manual metal arc welding process
- MEM05083 Perform welds to code standards using manual metal arc welding process
- MEM05088 Perform welds to code standards using oxy fuel gas welding process
- MEM05060 Perform welds to code standards using submerged arc welding process.

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

Band: This unit has dual status and is to be regarded as both a specialisation Band A unit and Specialisation Band B unit for progression to C7.

Unit Weight: 4

Pre-requisite Unit

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

Competency Field

Fabrication

Elements and Performance Criteria

Elements	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 welding and testing requirements from specifications, drawings, job sheets or work instructions 1.5 Interpret welding terms and symbols correctly
2. Plan the logical sequence of welding operations	2.1 Apply regulatory and safety requirements to welding task planning 2.2 Apply principles of planning and setting up welding to welding task 2.3 Plan preparation of welds for testing in accordance with SOPs 2.4 Plan processes required to support welding task 2.5 Plan post welding requirements including visual inspection, dimensional checks, and sampling in accordance with SOPs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills 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.

Regulatory and safety requirements include:	AS 1796 Certification of welders and welding supervisors, or equivalent welding standards and codes.
Welding is to AS 1796 Certification of welders and welding supervisors or equivalent and includes one or more of the following:	• flux core arc welding (FCAW) • gas metal arc welding (GMAW) • gas tungsten arc welding (GTAW) • manual metal arc welding (MMAW) • submerged arc welding (SAW) • oxy fuel gas welding.
Processes to support required welding include one or more of the following:	• cutting, bevelling and assembly of plates and components for welding • pre-welding heat treatment • post-welding heat treatment • stress relieving • use of backing bars, plates and rings • normalising and annealing.

Unit Mapping Information

No equivalent unit.

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 MEM05078 Apply welding principles

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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 and include the ability to:

- follow work instructions, standard operating procedures (SOPs) and safe work practices
- interpret and apply regulatory and safety requirements, including welding terms, codes and symbols as required by AS 1796 Certification of welders and welding supervisors or equivalent, and welding standards and codes plan for inclusion of:
 - safety precautions for self and others specific to a welding task
 - backing bars, plates and rings
 - appropriate pre-and post-heat treatment processes for different types of welded materials
- plan weld sequence and preparation of materials in a logical manner for welding job on at least two occasions
- integrate weld testing and sampling requirements into welding operations plan
- plan for visual and dimensional checks of completed welding tasks.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

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)
- welding terminology, including codes and symbols
- planning processes for set up and performance of welding including:
 - pre and post heat treatment
 - logical sequence for welding processes, positions and joints
 - correct alignment, fit-up and support during welding
 - tools, equipment and techniques used in welding.
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Assessment Conditions

Assessors must:

- have vocational competency in applying welding principles 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.
 - Knowledge assessment may be either verbal or written but must adequately reflect the knowledge requirements of the unit in a functioning workplace.
- 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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