



Australian Government

MEM05010 Apply fabrication, forming and shaping techniques

Release: 2

MEM05010 Apply fabrication, forming and shaping techniques

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM05010 Apply fabrication, forming and shaping techniques (Release 1).

Release 1. Supersedes and is equivalent to MEM05010C Apply fabrication, forming and shaping techniques.

Application

This unit of competency has been developed for Engineering Tradesperson – Fabrication apprenticeship training and the recognition of trade-level skills in fabrication, forming and shaping of a wide variety of shapes and products undertaken using a variety of forming and shaping techniques.

Fabrication, forming and shaping is done to specifications interpreted from technical drawings and job specifications using a variety of tools and equipment.

Skills covered by this unit are generally applied in occupational and work situations associated with steel fabrication, boiler making or sheet metal work.

Where heating and thermal cutting is required unit MEM05007 Perform manual heating and thermal cutting should also be selected.

Where marking off/out skills is required unit MEM12007 Mark off/out structural fabrications and shapes should also be selected.

Where welds are required to meet legislative or regulatory requirements appropriate welding units should also be selected.

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

Band: A

Unit Weight: 8

Pre-requisite Unit

MEM05037	Perform geometric development
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	Select and set up equipment for a specific operation	2.1	Select most appropriate tools and equipment
		2.2	Set up equipment and adjust for operation according to SOPs
		2.3	Calculate and determine allowances for shrinkage, thickness and inside/outside measurements
3	Operate equipment	3.1	Prepare equipment for forming and shaping
		3.2	Operate and adjust equipment to form and shape material to meet specifications

Elements describe the essential outcomes.

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

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|---|--------------------------------|-----|---|
| 4 | Form and shape material | 4.1 | Level, straighten, roll, press or bend material to specifications/drawings using fabrication techniques |
| | | 4.2 | Follow correct hot or cold forming techniques |
| | | 4.3 | Check final product for compliance to specification and rectify, as 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.

Tools and equipment include one (1) or more of the following:

- presses
- shapers
- benders
- rollers
- drop hammers

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

- plate
- sheet
- tube
- pipe

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

- ferrous
- non-ferrous

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.

Forming and shaping include one (1) or more of the following:

- levelling
- straightening
- rolling
- pressing
- bending

Forming and shaping is applied to produce one (1) or more of the following:

- pipework
- chamfers
- cylinders
- cones
- angles
- hoppers
- ductwork
- square to round
- transitions'
- lobster backs
- tubular shapes, including hand rails, reticulation pipework and mufflers

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM05010 Apply fabrication, forming and shaping techniques (Release 1).

Release 1. Supersedes and is equivalent to MEM05010C Apply fabrication, forming and shaping techniques.

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 MEM05010 Apply fabrication, forming and shaping techniques

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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
- selecting relevant tools and equipment to fabricate, form and shape materials
- setting up and safely operating equipment
- forming and shaping materials
- performing calculations associated with allowances for shrinkage, thickness and inside/outside measurements
- checking final product for compliance with specifications
- rectifying defects.

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 work practices and procedures and use of personal protective equipment (PPE)
- hot and cold forming/shaping processes
- machines, tools and equipment required to perform forming/shaping processes and reasons for selection
- equipment adjustments that can be made and the effect on the object being formed/shaped
- calculations to determine allowances
- machine and equipment operation
- material positioning/feeding requirements
- location and function of all safety guards
- defects in formed/shaped materials and required rectification by further work/adjustment.

Assessment Conditions

- Assessors must:

- have vocational competency in applying fabrication, forming and shaping techniques 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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