



Australian Government

MEM09021 Interpret and produce drawings of curved 3-D shapes

Release: 1

MEM09021 Interpret and produce drawings of curved 3-D shapes

Modification History

Release 1. Supersedes and is equivalent to MEM09021B Interpret and produce curved 3-dimensional shapes

Application

This unit of competency defines the skills and knowledge required to produce and interpret lines plan drawings manually or using computer-aided design (CAD) equipment complying with industry standards.

It applies to drawing and lofting principles used to produce lines plan drawings and loftings and common applications of this unit are in marine vessel construction.

In a marine setting, tasks may relate to drawings for hull designs, section development, including curved and raking transom, conical development and camber development methods.

Where a CAD system is used for basic drawing unit MEM09003 Prepare basic engineering drawing should also be selected.

Where more extensive CAD system is used for design unit MEM09009 Create 2-D drawings using computer-aided design system should be selected.

Where straightforward take-offs from lofted drawings, or where transfer of lines to lofting floor or other surface is required to be carried out, unit MEM12007 Mark off/out structural fabrications and shapes should 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

MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Drawing, drafting and design

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	Identify design requirements from specifications, job sheets or associated work instructions
2	Apply drawing procedures	2.1	Determine and outline lines drawing procedures and identify data requirements
		2.2	Set up appropriate drawing equipment to suit requirements
		2.3	Apply drawing procedures to suit specified drawing
		2.4	Record any alterations to offset measurements, where applicable
		2.5	Ensure drawings are consistent with operation procedures and industry requirements
3	Submit lines plan drawings	3.1	Submit completed drawings in accordance with industry standards
		3.2	Supply altered offset measurements and relevant drawing information, where applicable

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.

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

- client brief
- industry standards
- survey specifications

Submitted includes to one (1) or more of the following:

- client
- supervisor
- boat builder/ship builder
- surveying authority

Industry standards relate to one (1) or more of the following:

- accuracy
- design
- layout
- tabulation of offsets
- material specification
- construction specifications
- quality of presentation of drawings

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 MEM09021 Interpret and produce drawings of curved 3-D shapes

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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
- determining drawing requirements
- applying drafting procedures to produce curved 3-D shapes using appropriate drawing equipment ensuring they are consistent with operation procedures and industry requirements
- undertaking numerical operations, geometry, calculations and formula associated with interpreting and producing curved 3-D shapes
- submitting completed drawings to applicable personnel and supplying altered offset measurements and all relevant information.

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
- vessel design characteristics, including performance, stability and construction methods
- data requirements for producing lines plan drawings
- numerical operations, geometry, calculations and formulae
- spatial concepts
- drawing techniques and procedures and use of equipment
- industry standards, terminology and symbols applying to lines plan drawings.

Assessment Conditions

- Assessors must:
 - have vocational competency in interpreting and producing curved 3-D shapes 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
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, 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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