



Australian Government

MEM09006 Perform advanced engineering detail drafting

Release: 1

MEM09006 Perform advanced engineering detail drafting

Modification History

Release 1. Supersedes and is equivalent to MEM09006B Perform advanced engineering detail drafting

Application

This unit of competency defines the skills and knowledge required to use manual drafting and drawing equipment to produce assembly, layout and detail drawings to AS 1100 Technical drawing or equivalent.

Skills covered by this unit are applied individually or in a team environment where comprehensive responsibility for the production of the drawing is exercised, and critical dimensions and associated tolerances are determined as required.

Where a computer-aided design (CAD) system is used unit MEM09009 Create 2-D drawings using computer-aided design system and unit MEM09010 Create 3-D models using computer-aided design system, should also be selected as appropriate.

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

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM09003	Prepare basic engineering drawing
MEM09005	Perform basic engineering detail drafting
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 job requirements job sheets or other associated work instructions
2	Prepare assembly, layout and detail drawing	2.1	Determine specification requirements
		2.2	Undertake engineering calculations to determine all dimensions required to ensure functional operation and suitability
		2.3	Produce all drawings to AS 1100 Technical drawing or equivalent
3	Select material, components or assemblies	3.1	Select material, components or assemblies from data sheets or supplier catalogues to meet specifications
		3.2	Compile material, component or assembly list
4	Check drawings	4.1	Check drawings to ensure compliance with specifications
		4.2	Check drawings to ensure that assembly or fabrication is possible

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.

- Dimensions include the following:**
- limits and fits
 - surface texture
 - datum references
 - geometric tolerances

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 MEM09006 Perform advanced engineering detail drafting

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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
- preparing layout, assembly and detail drawings to AS 1100 Technical drawing or equivalent according to specifications including undertaking calculations to determine all dimensions appropriate to ensure functional operation and suitability
- undertaking numerical operations, geometry, calculations and formulae associated with performing advanced engineering detail drafting
- interpreting data sheets and supplier catalogues to select material, components or assemblies to meet specifications
- checking drawing for compliance with specifications.

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
- specifications and requirements of the component, assembly or layout to be drawn
- numerical operations, geometry, calculations and formulae associated with performing advanced engineering detail drafting
- functional operation of the component or assembly to be drawn
- surfaces which are to be in contact or separated
- appropriate type of fit for contacting surfaces and reasons for selection
- effect of surface finish on the performance and operation of surfaces
- appropriate datum points
- procedures for determining all appropriate lineal, diametric and geometric tolerances
- requirements of AS 1100 Technical drawing or equivalent for the drawings to be produced
- specifications of the materials, components or assemblies
- appropriate components and materials from supplier catalogues and reasons for selection
- procedures and reasons for checking the drawings to ensure that manufacturing or assembly is possible, efficient and cost effective

- drawing specifications
- methods of manufacture or assembly from the drawings
- unnecessary or inappropriate tolerances.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced engineering detail drafting 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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