



Australian Government

MEM09009 Create 2-D drawings using computer-aided design system

Release: 1

MEM09009 Create 2-D drawings using computer-aided design system

Modification History

Release 1. Supersedes and is equivalent to MEM09009C Create 2D drawings using computer aided design system

Application

This unit of competency defines the skills and knowledge required to produce 2-D drawings using a computer-aided design (CAD) system. Skills include producing linked bills of material, file management and associated customisation of installed software, including the use of macros, menus and default settings. 2-D drawings can be produced from 3-D models created using CAD system.

The unit primarily applies to the fields of mechanical, electrical or electronic, fabrication and fluid power.

This unit covers CAD skills only. Where detail drafting skills are required see the following units:

- MEM09004 Perform electrical or electronic detail drafting
- MEM09005 Perform basic engineering detail drafting
- MEM09006 Perform advanced engineering detail drafting

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

Band: B

Unit Weight: 8

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM16008	Interact with computing technology

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 from specifications, job sheets or associated work instructions
2	Prepare CAD environment	2.1	Customise system variables, menus and drawing defaults to suit standard operating procedures
		2.2	Develop macros to specifications
3	Create 2-D drawings	3.1	Create drawings using the available software system
		3.2	Link drawing entities to database attributes to suit job requirements
		3.3	Create detailed views using various scales to meet job requirements
4	Produce output	4.1	Save files in various formats according to procedures
		4.2	List linked entities in a bill of materials format to meet job requirements
		4.3	Extract supplementary data from drawing to meet job requirements, as necessary

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.

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

- plans
- diagrams
- charts
- electrical or electronic circuits

File formats include one (1) or more of the following:

- IGES
- DXF
- HPGL

Entities mean any single item created on the screen and include one (1) or more of the following:

- lines
- arcs
- circles
- text
- hatch
- dimensions

Attributes include mean properties associated with an entity and include one (1) or more of the following:

- layer
- level
- line type
- line width
- colour
- text type

Supplementary data includes one (1) or more of the following:

- area
- lengths
- angles
- perimeters

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09009C Create 2D drawings using computer aided design system

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 MEM09009 Create 2-D drawings using computer-aided design system

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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 computer-aided design (CAD) systems to create 2-D drawings by customising system variables, menus and drawing defaults and developing macros to specifications and SOPs
- creating 2-D drawings using CAD with the full capacity of the software system and linking drawing entities
- undertaking numerical operations, geometry and calculations or formulae associated with creating 2-D drawings using CAD system
- linking entities to data attributes including mean properties associated with an entity and creating detailed views using appropriate scales to suit specifications
- producing and saving files in various formats, listing link entities in a bill of materials format and extracting supplementary data from drawing to meet job requirements.

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
- CAD software system
- system variables that can be customised
- procedures for:
 - customising identified system variables and reasons why
 - customising menus, system defaults and developing macros and reasons why
 - linking drawing entities to database attributes
 - printing drawing files
 - creating additional views of the object being drawn
 - saving drawing files
 - producing bills of material
 - extracting data with respect to drawn shapes and features

- applicable drafting standards and procedures
- drawing features of the CAD software system
- reasons for using specialised software features
- appropriate drawing scales
- various formats in which drawing files can be saved and reasons for using different formats when saving drawing files
- properties of shapes, sections and features that can be extracted from the drawing file.

Assessment Conditions

- Assessors must:
 - have vocational competency in creating 2-D drawings using computer-aided design system 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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