



Australian Government

MEM09204 Produce basic engineering detail drawings

Release: 1

MEM09204 Produce basic engineering detail drawings

Modification History

Release 1. Supersedes and is equivalent to MEM09204A Produce basic engineering detail drawings.

Application

This unit of competency defines the skills and knowledge required to produce basic engineering detail drawings to Australian Standard (AS) 1100.101 Technical drawing - General principles and is primarily for those working within a drafting work environment with engineering and manufacturing applications.

Critical dimensions and specifications for the drawing are predetermined and may be obtained from design information, customer requirements, sketches and preliminary layouts and drawings. Drawings will usually be carried out with the use of computer-aided design (CAD) systems but may also be done manually.

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

Pre-requisite Unit

MEM09229 Read and interpret technical engineering drawings

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) or work instructions 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Identify job requirements from existing documentation, and identify and address further information needs 1.4 Check purpose, scope and information requirements for drawing 1.5 Identify and prepare equipment required to complete work 1.6 Determine drawing presentation requirements

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	1.7 Determine communication requirements
2. Produce detail drawing	2.1 Prepare drawings in plane orthogonal 2.2 Apply standard drawing conventions, including dimensions, required method of projection, and full notation 2.3 Use drawing techniques according to work requirements 2.4 Apply industry symbols and ensure presentation meets industry standards
3. Prepare engineering parts list	3.1 Identify components or parts and organise by component type in accordance with SOPs 3.2 Prepare parts list in accordance with SOPs
4. Complete drawing task	4.1 Check and confirm dimensions, angles and proportions 4.2 Confirm drawing contains all relevant and accurate information 4.3 Present drawing according to organisational requirements 4.4 Issue and file drawing in accordance with SOPs 4.5 Evaluate work and identify areas for improvement 4.6 Print the final drawing to a standard scale

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.

Standard drawing conventions include:	• use of correct dimensioning technique • use of correct scales and proportion
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	Plus one or more of the following: • use of correct sectioning technique • identification of cutting plane • accurate line types • appropriate view positions • use of correct symbols • provision of suitable number of views • neat presentation.
Drawing techniques include one or more of the following:	• orthogonal projection: • first angle projection • third angle projection • projection symbol • preferred system of projection in Australia • number of views • relationship of views • sheet format: • borders and title blocks • application of projection symbol • drawing sheets and sizes • lettering styles • Australian Standards • dimensioning: • unidirectional dimensioning • aligned dimensioning • projection and dimension lines • arrow heads • dimension placement • scale drawing: • recommended scales • reduction scales • enlargement scales • multiple scales • dimensioning techniques of scale drawings • sectioning and types of sections: • required section views • placement of views • cutting planes • labelling of cutting planes and section views • general notes.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09204A Produce basic engineering detail drawings.

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 MEM09204 Produce basic engineering detail drawings

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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:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- obtaining and interpreting instructions and specifications necessary to produce the drawing on at least two occasions
- planning and sequencing operations
- checking and clarifying task-related information
- using computer technologies and navigating software
- interpreting technical information and conducting mathematical problem solving
- applying spatial principles to achieve scale and proportion on at least two occasions
- using drafting equipment appropriate to the drawing method chosen on at least two occasions
- recording completed drawings and parts lists in accordance with standard operating procedures (SOPs)
- handling and storing the approved drawings and parts lists in accordance with standard operating procedures (SOPs).

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 work practices and procedures
- general knowledge of different approaches to drawing
- awareness of copyright and intellectual property issues and legislation in relation to drawing
- quality assurance procedures
- standard drawing conventions
- drawing techniques
- principles of plane geometry

- drawing construction including four centre method, ordinate method, sectioning isometric shapes and dimensions and notations
- requirements and purpose of the drawing to be produced
- requirements and purpose of the engineering parts list
- sources of relevant data and information
- timeframe for completion of drawings
- persons authorised to confirm drawing requirements.
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Assessment Conditions

- Assessors must:
 - have vocational competency in measuring and sketching site information 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 that 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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