Australian Government

MEM09202 Produce freehand sketches

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM09202A Produce freehand sketches.

Application

This unit of competency defines the skills and knowledge required to complete freehand sketches to illustrate or communicate information to be used in engineering drafting applications. It includes the use of standard drawing conventions and techniques to represent the subject in appropriate proportion and view. Sketches can be used as part of the drafting process to illustrate or communicate information about design, worksite, layout plan or construction features and the unit includes the ability to apply standard drawing conventions to sketching 2D orthogonal and pictorial freehand drawings and sectional views.

This unit is suitable for those working within a computer-aided design (CAD) or drafting work environment.

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

Competency Field

Drawing, drafting and design

Elements and Performance Criteria

Elements	**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 Determine purpose, scope and presentation context for sketch and the information needs of the audience 1.4 Identify key features of the job 1.5 Obtain any additional information required 1.6 Determine suitable sketching techniques to meet job requirements 1.7 Select and prepare materials
2. Create simple sketches of pictorial,	2.1 Prepare simple freehand sketches using standard orthogonal and pictorial conventions

Elements	Performance Criteria
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
orthographic and sectional views	2.2 Prepare sectional details of simple structural or mechanical elements and elevations using standard orthogonal drawing practice 2.3 Apply industry specific terminology, symbols and specifications to convey required information 2.4 Label sketch to confirm currency and purpose 2.5 Confirm sketch is a proportional representation of subject and applies standard drawing conventions
3. Produce pictorial sketches of engineering components	3.1 Select principal axis and angles 3.2 Sketch isometric and non-isometric lines 3.3 Construct pictorial circles and arcs 3.4 Sketch isometric, oblique and perspective views 3.5 Conduct calculations to ensure correct dimensions and proportions and construct and use scales for sketch 3.6 Complete border and title blocks 3.7 Confirm sketch is an accurate representation of subject and applies standard drawing conventions

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.	
Sketch requirements include one or more of the following:	• key features • dimensions • orientation • structures • services.

Key features include one or more of the following:	• shape • proposed subject • existing structures • services • dimensions • types of structure • shape of structure • type of construction • types of fasteners • layout • service requirements • location of plant and machinery • vertical and horizontal measurements.
Orientation includes one or more of the following:	• relationship to the north compass point • location of other subjects • relationship to other subjects.
Additional information includes one or more of the following:	• measurements and dimensions • design specifications • material.
Drawing materials include one or more of the following:	• pen and ink • graphite pencils • graph paper • cartridge paper • tracing paper.
Standard drawing conventions include:	• use of correct sectioning technique • identification of cutting plane • accurate line types • appropriate view positions to the recognised drawing convention • use of correct symbols • use of correct dimensioning technique • provision of suitable number of views • use of correct proportions • neat presentation.
Construction techniques include one or more of the following:	• use of parallel lines • bisection of lines, angles and arcs • equal division of lines • construction of angles at 90, 45, 30, 60, 75 and 15 degrees • construction of a hexagon • sketching arcs tangential to two lines • sketching arcs tangential to two other arcs, internally and externally

	• sketching an arc tangential to a straight line and another arc • determining and indicating tangent points.

Drawing techniques include:	• orthogonal projection:
	  • first angle projection
	  • third angle projection
	  • projection symbol
	  • preferred system of projection in Australia
	  • number of views
	  • relationship of views
	• sectioning:
	  • types of sections
	  • required section views
	  • placement of views
	  • cutting planes
	  • labelling of cutting planes and section views
	Plus one or more of the following:
	• 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.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09202A Produce freehand sketches.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2