



Australian Government

MEM09217 Prepare plans for pipe and duct fabrication

Release: 1

MEM09217 Prepare plans for pipe and duct fabrication

Modification History

Release 1. Supersedes and is equivalent to MEM09217A Prepare plans for pipe and duct fabrication.

Application

This unit of competency defines the skills and knowledge required to prepare drawings and plans for pipe and duct fabrication and installation to Australian Standard (AS) 1100.101 Technical drawing - General principles and is primarily for those performing drafting work within the air conditioning industry.

Critical dimensions and specifications are predetermined and drawings are prepared with or without the use of computer-aided design (CAD) systems.

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. Access and interpret specifications	1.1 Follow standard operating procedures (SOPs) and comply with work health and safety (WHS) requirements at all times 1.2 Interpret project specifications and requirements for pipework, including layout, sizing and type of pipe and duct required 1.3 Determine implications and requirements for pipe fabrication and support 1.4 Access and interpret organisational and industry standards, information and catalogues to obtain required product specifications
2. Document pipe fabrication	2.1 Determine appropriate methods of joining and cutting pipe materials being used

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.2 Determine appropriate methods for supporting pipework materials being used 2.3 Document pipe fabrication requirements on plans 2.4 Document pipe support requirements on plans 2.5 Include instructions for electrolysis of dissimilar materials on plans
3. Document duct fabrication	3.1 Determine appropriate methods of joining and cutting duct materials being used 3.2 Determine appropriate methods for supporting duct work materials being used 3.3 Document duct fabrication requirements on plans 3.4 Document duct support requirements on plans 3.5 Include instructions for electrolysis of dissimilar materials on plans
4. Complete and store drawings	4.1 Complete drawings and associated technical information in accordance with project requirements and SOPs 4.2 Process drawings and associated documentation for approval in accordance with organisational requirements 4.3 Store drawings and associated documentation in accordance with SOPs

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.

Types of duct include one or more of the following:	• supply air (S/A) • return air (R/A)
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	• toilet exhaust • kitchen exhaust • smoke spill • fire rated • textile duct • sub-ducts • filter plenums.
Types of duct insulation (materials and facings) include one or more of the following:	• foil face • perf face • black matt • Melinex lining • Galvabond • polyester • fibreglass • jointing • flanges • seams • polystyrene • nitrile rubber.
Methods of joining include one or more of the following:	• spigots • flanges • mild steel angles • weld • braze • solder • seal • bolt.
Materials include one or more of the following:	• copper • mild steel • stainless steel • plastic • acrylonitrile butadiene styrene (ABS) • polyvinyl chloride (PVC).
Methods for supporting include one or more of the following:	• clamping • hanging • steel profile types.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM09217A Prepare plans for pipe and duct fabrication.

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 MEM09217 Prepare plans for pipe and duct fabrication

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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
- interpreting project specifications and industry standards for pipework and duct fabrication
- selecting methods of joining and cutting pipe and duct
- selecting methods of supporting pipework
- providing instructions for electrolysis of dissimilar materials on plans
- applying spatial principles to achieve scale and proportion to plans
- preparing drawings for pipe fabrication on at least two occasions
- preparing drawings for pipe installation on at least two occasions
- preparing drawings for duct fabrication on at least two occasions
- preparing drawings for duct installation on at least two occasions
- confirming plans accurately reflect specifications
- documenting and storing plans in accordance with SOPs
- complying with organisational policies and procedures including quality requirements.

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
- relevant codes of practice
- industry standards
- duct construction
- types of duct
- types of duct insulation (materials and facings)
- pipe construction materials

- pipework insulation
- methods for supporting pipe and duct
- sketching pipe and duct fabrication joining methods for pipe and duct work
- brackets and supports
- electrolysis and methods to reduce it between dissimilar materials.
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Assessment Conditions

- Assessors must:
 - have vocational competency in preparing plans for pipe and duct fabrication 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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