



Australian Government

MEM05071 Perform advanced manual thermal cutting, gouging and shaping

Release: 1

MEM05071 Perform advanced manual thermal cutting, gouging and shaping

Modification History

Release 1. Unit code changed. Changes to performance evidence and knowledge evidence. Supersedes and is not equivalent to MEM05008 Perform advanced manual thermal heating cutting, gouging and shaping.

Application

This unit of competency has been developed for engineering fabrication trade training and the recognition of trade skills in advanced manual thermal cutting, gouging, and shaping to produce complex internal and external profiles.

It defines the skills and knowledge required to set up and safely perform advanced manual thermal cutting, gouging, and shaping by a variety of methods as defined by the unit in conjunction with its prerequisites to satisfy predetermined shape, size and surface finish specifications.

Where the selection and use of tools is required, the unit MEM18001 Use hand tools and/or unit MEM18002 Use power tools/hand held operations, must also be selected as appropriate.

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

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM05007 Perform manual heating and thermal cutting

MEM09002 Interpret technical drawing

MEM11011 Undertake manual handling

MEM12023 Perform engineering measurements

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

Competency Field

Fabrication

Elements and Performance Criteria

Elements	Performance Criteria
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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 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements including relevant standards and codes from specifications, drawings, job sheets or work instructions
2. Select and set up equipment for manual thermal cutting, gouging and shaping	2.1 Select appropriate cutting process and procedure for material being worked 2.2 Select and assemble appropriate accessories and equipment 2.3 Ensure equipment is in safe working condition 2.4 Set up equipment and material in accordance with SOPs
3. Perform manual thermal cutting, gouging and shaping	3.1 Follow equipment start-up procedures 3.2 Cut material to specifications 3.3 Identify cutting, gouging or shaping defects and take corrective action in accordance with SOPs 3.4 Cut, gouge or shape material with minimum impact on sound metal 3.5 Check final shape, profile and/or surface finish for compliance with specifications

Foundation Skills

This section describes those language, literacy, numeracy and employment skills 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.

Materials include one or	- ferrous - non-ferrous
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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.	
more of the following:	• non-metallic.
Appropriate accessories and equipment include one or more of the following:	• jigs • fixtures • work piece restraints.
Heat sources for thermal cutting, gouging or shaping include one or more of the following:	• oxy acetylene • oxy/hydrogen • plasma • carbon arc.
Material pre-checks include one or more of the following:	• secure fixing of material before thermal cutting, gouging or shaping • seeking professional or technical advice before cutting, gouging or shaping existing plate or pipe if signs of excessive wear or damage to existing welds are present that may pose a risk of spring-back.
Cutting, shaping and gouging equipment include one or more of the following:	• gas cylinders • hoses • blowpipes • tips and nozzles • regulators • flashback arrestors.

Unit Mapping Information

No equivalent unit.

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 MEM05071 Perform advanced manual thermal cutting, gouging and shaping

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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 the ability to:

- follow work instructions, standard operating procedures (SOPs) and safe work practices
- select appropriate equipment to manual heat, thermal cut and gouge, including the selection of settings and consumables to specifications, on at least two occasions
- check condition of equipment and material
- set up:
 - gas cylinders
 - hoses
 - blowpipes
 - tips and nozzles
 - regulators
 - flashback arrestors
 - jigs, fixtures, and work piece restraints
- operate equipment to produce complex internal and external profiles with shape, profile and surface finish to predetermined specifications with minimum loss of sound material
- operate equipment to cut material to job requirement
- operate equipment to gouge material to job requirement
- identify equipment defects and take appropriate remedial action
- check final product for compliance with specifications.

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 and use of personal protective equipment (PPE)
- cutting processes and procedures appropriate to different types of materials
- potential equipment faults
- manual cutting, gouging and shaping specifications and procedures

- use and applications of equipment and techniques for manual, cutting, gouging and shaping
- set up procedures for manual cutting, gouging and shaping equipment and accessories
- equipment settings, pre-checks and operation
- sources of information and application on equipment settings and consumables
- procedures for adjusting manual cutting, shaping and gouging equipment
- cutting allowances and reasons for applying them
- procedures and reasons for minimising waste material
- techniques required to correct defects and their causes.
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Assessment Conditions

- Assessors must:
- have vocational competency in performing advanced manual thermal cutting, gouging and shaping 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.
 - Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Knowledge assessment may be either verbal or written but must adequately reflect the knowledge requirements of the unit in a functioning workplace.
- 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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