



Australian Government

MEM18003 Use tools for precision work

Release: 1

MEM18003 Use tools for precision work

Modification History

Release 1. Supersedes and is equivalent to MEM18003C Use tools for precision work

Application

This unit of competency defines the skills and knowledge required to use tools to manually produce work to precise dimensions and/or finishes.

It covers performing precision tasks on a range of metallic and non-metallic materials using a variety of tools, instruments and power equipment.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where precision measurement is required unit MEM12003 Perform precision mechanical measurement should also be selected.

Where precision marking out is required unit MEM12006 Mark off/out (general engineering) should also be selected.

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

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM11011 Undertake manual handling

MEM12023 Perform engineering measurements

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

MEM18001 Use hand tools

MEM18002 Use power tools/hand held operations

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|---|-----|---|
| 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 from specifications, drawings, job sheets or work instructions |
| | | | |
| 2 | Prepare tools and tooling to produce precision outcome | 2.1 | Select processes/techniques appropriate to the precision work to be undertaken, material and specifications |
| | | 2.2 | Select tools, accessories and consumables appropriate to task, specifications and material |
| | | 2.3 | Prepare tools/tooling and adjust, as required |
| | | | |
| 3 | Use tools to produce work to precise specifications | 3.1 | Prepare the work piece and secure using appropriate method for selected operation |
| | | 3.2 | Use tools to produce specified outcome to the required accuracy in accordance with SOPs |
| | | 3.3 | Inspect tools and equipment for safe and proper working order before, during and after use |
| | | 3.4 | Identify unserviceable tools, repair where appropriate, or mark for repair or disposal, according to prescribed procedure |
| | | 3.5 | Undertake inspection and maintenance of tools and equipment according to standard workplace procedures, principles and techniques |
| | | 3.6 | Store and maintain tools to ensure serviceability |

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.

Techniques include one (1) or more of the following:

- cutting out
- drilling
- fitting
- filing
- reaming
- lapping
- broaching
- burnishing
- scraping
- polishing
- hand held grinding
- chiselling

Precision work includes one (1) or more of the following:

- scraping machine beds to precise tolerances
- broaching a keyway
- hand reaming the bore of a spigot or bush to a positive transition fit with shaft
- core drilling (finishing) a blind hole to receive a mating pin
- lapping a mechanical seal to fine finish
- filing complex angles and mating edges
- precision grinding using a flexible drive shaft attachment

Precision outcomes include one (1) or more of the following:

- specified tolerances
- allowances
- fits
- finishes
- alignments

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.

Tools or equipment required to achieve precision outcomes include one (1) or more of the following:

- reamers
- files
- chisels
- polishing buffs
- lapping plate
- broaches
- flat, half round and bore scrapers

Tool adjustment includes one (1) or more of the following:

- tool shape
- rake angle
- clearance angles

Inspection and preventative maintenance include one (1) or more of the following:

- visual checking of leads and connections
- sharpening of cutting equipment
- repair of associated tools

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18003C Use tools for precision work

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 MEM18003 Use tools for precision work

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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 tools for precision outcomes, including selecting processes and engineering techniques, methods and procedures appropriate to the task
- determining and making tool adjustments to produce required outcome, where applicable
- selecting and using precision tools and equipment to produce the desired outcome to meet job specifications
- following designated procedures for dealing with unsafe or faulty tools
- undertaking routine repair/operational maintenance of tools and equipment and storing in accordance with procedures.

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)
- work to be undertaken and specifications to be achieved
- appropriate tools, processes and equipment required to carry out the work to the required specifications and reasons and procedures for using the selected tools
- engineering principles to be applied during the use of the tools
- manufacturers' specifications of the tools and equipment selected
- procedures for checking tools and equipment for correct and safe operation
- common faults and/or defects in tools and equipment used/selected
- procedures for marking unsafe or faulty tools and equipment for repair
- repairs/operational maintenance that can be made to the tools and equipment used/selected
- procedures for repairing/maintaining the tools and equipment used/selected
- procedures for checking/storing tools and equipment used/selected prior to storage and storage location.

Assessment Conditions

- Assessors must:
 - have vocational competency in using tools for precision work 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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