



Australian Government

Department of Education, Employment and Workplace Relations

MEM18003C Use tools for precision work

Release: 1

MEM18003C Use tools for precision work

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers using tools to manually produce work to precise dimensions and or finishes.
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Application of the Unit

Application of the unit	<p>Work is undertaken autonomously or in a team environment, using predetermined standards of quality, safety and workshop procedures.</p> <p>This unit involves using a variety of tools, instruments and power equipment to perform precision tasks on a range of metallic and non-metallic materials.</p> <p>As a guide, the types of precision work covered by this unit could include:</p> <ul style="list-style-type: none"> • scraping machine beds to precise tolerances • broaching a tapered keyway • hand reaming the bore of a spigot or bush to a positive transition fit with shaft • core drilling (finishing) a blind locating hole to receive a mating pin • lapping a mechanical seal to fine finish • filing complex angles and mating edges • precision grinding using flex-drive attachment or similar <p>Inspection and preventative maintenance of tools and equipment involves the visual checking of leads and connections, sharpening of cutting equipment and the repair of associated tools.</p> <p>Where precision measurement is required, Unit MEM12003B (Perform precision mechanical measurement) should also be selected.</p> <p>Where precision marking out is required, Unit MEM12006C (Mark off/out [general engineering]) should also be selected.</p> <p>Where specifications are interpreted from engineering drawings, detailed/technical sketches and associated documents, Unit MEM09002B (Interpret technical drawing) should also be selected.</p>
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	Band: A Unit Weight: 4
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Determine job requirements	<p>1.1.Task requirements and specifications are determined and clarified with appropriate persons.</p> <p>1.2.Processes/techniques are selected appropriate to task, specifications and material.</p>
2. Prepare tools and tooling to produce precision outcome	<p>2.1.Tools, accessories and consumables are selected appropriate to task, specifications and material.</p> <p>2.2.Where applicable, cutting tool modifications required to produce outcome are determined using engineering principles.</p> <p>2.3.Tools/tooling are prepared and modified as required.</p>
3. Use tools to produce work to precise specifications	<p>3.1.The work area is prepared and made safe.</p> <p>3.2.The work piece is prepared and secured using appropriate method for selected operation/s.</p> <p>3.3.Tools are used according to acceptable engineering principles, methods, applications and procedures to produce specified outcome to the required accuracy.</p> <p>3.4.Tools and equipment are inspected for safe and proper working order before, during and after use.</p> <p>3.5.Unserviceable tools/equipment are identified, repaired where appropriate, or marked for repair and/or disposal, according to prescribed procedure.</p> <p>3.6.Tools are stored and maintained to ensure serviceability.</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Look for evidence that confirms skills in:

- obtaining and interpreting relevant drawings, specifications, instructions etc.
- preparing and making safe the work area(s) prior to the work being carried out
- using appropriate tools to produce the specified outcomes
- checking tools and equipment for safe and proper working order before, during and after use

REQUIRED SKILLS AND KNOWLEDGE

- where appropriate, marking unsafe or faulty tools and equipment for repair
- where appropriate, repairing/maintaining unsafe or faulty tools
- checking condition of all tools and equipment for conformance to specifications and safe and proper operation prior to storage
- safely storing all tools and equipment in the appropriate location

Required knowledge

Look for evidence that confirms knowledge of:

- work to be undertaken
- specifications to be achieved
- appropriate tools, processes and equipment required to carry out the work to the required specifications
- reasons for selecting the chosen tools, processes and equipment
- hazards and control measures associated with using the selected tools, processes and equipment, including housekeeping
- safety procedures to be followed to ensure the safety of the individual and other personnel
- 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
- safe and proper function of 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 tools and equipment prior to storage
- storage location of the tools and equipment used/selected
- procedures for storing tools and equipment used/selected

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to use tools to fashion or shape work to high levels of precision for dimension and or finish to specifications. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with using tools for precision work or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Processes

- Hand tools and hand held power tools are used to fashion or shape work to high levels of precision for dimension and or finish to specifications
- Engineering techniques, methods and procedures may include cutting out, drilling, fitting, filing, reaming, lapping, broaching, burnishing, scraping, polishing, hand held grinding, chiselling

Precision outcomes

Specified tolerances, allowances, fits, finishes, alignments

Tools

Any tools or equipment required to achieve precision outcomes

Tool modifications

Tool shape, rake angle and clearance angles

Unit Sector(s)**Unit sector**

Co-requisite units

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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