



Australian Government

Department of Education, Employment and Workplace Relations

MEM12003B Perform precision mechanical measurement

Release: 1

MEM12003B Perform precision mechanical measurement

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing precision mechanical measurement by using precision measuring equipment, setting comparison measuring devices and maintaining precision equipment.
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Application of the Unit

Application of the unit	<p>The unit applies to precision and/or complex use of strip gauges, engineering squares, lasers, angle dekkors, sine bars, angle gauges, polygons, dividing heads, rotary tables, precision levels, micrometers, height gauges, hardness testers, and texture measuring equipment etc.</p> <p>Work is undertaken autonomously or as part of team environment. Work is undertaken in the field (in situ) or in a workshop/laboratory environment.</p> <p>This unit covers comprehensive measuring skills where judgement is required in the selection of the most appropriate techniques/devices and where results are interpreted/analysed.</p> <p>All specifications are obtained from engineering drawings and data sheets and/or manufacturers' instructions/data. All measurement/test procedures are undertaken to standard operating procedures or manufacturers' recommended procedures.</p> <p>Band: A</p> <p>Unit Weight: 2</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM12023A	Perform engineering measurements

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. Use precision measurement equipment	1.1. Appropriate precision equipment is selected to achieve specified outcome. 1.2. Correct and appropriate measuring techniques are used for the measurement task. 1.3. Measurements are taken accurately to the finest graduation of instrument. 1.4. Readings and measurements are interpreted correctly and accurately.
2. Set comparative measuring devices	2.1. Measuring equipment is set to specifications using manufacturer guidelines or standard operating procedures and techniques.
3. Maintain precision equipment	3.1. Measuring equipment is adjusted and maintained to required accuracy, using manufacturer or standard operating procedures and techniques. 3.2. Equipment is stored to manufacturer specifications or standard operating procedures.

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:

- reading and interpreting text and numerical information on manufacturer specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- selecting/using precision mechanical measuring devices
- setting measuring devices to specification
- obtaining specified mechanical measurements to the finest graduation of the device
- measuring components to specified tolerances
- reading and interpreting measurements
- maintaining and adjusting precision mechanical measuring devices
- storing precision mechanical measuring devices
- undertaking calculations and numerical operations for measurement using precision mechanical measuring equipment

REQUIRED SKILLS AND KNOWLEDGE**Required knowledge**

Look for evidence that confirms knowledge of:

- the appropriate precision mechanical measuring device for given measurement requirements
- procedures to verify equipment being used has been recently calibrated
- suitability of environmental conditions for the measurements being carried out
- procedures/techniques for obtaining a range of mechanical measurements
- the accuracy to which a range of precision mechanical measuring devices can be read
- procedures for reading graduated mechanical measuring devices
- units of measurement and numerical operations within the scope of this unit
- procedures for setting precision mechanical measuring devices
- specifications of the equipment to be set
- tools and equipment for setting mechanical measuring devices
- the adjustments that can be made to a range of precision mechanical measuring devices
- procedures for adjusting and maintaining precision mechanical measuring devices
- procedures for storing precision mechanical measuring devices
- hazards and control measures associated with precision mechanical measurement, including housekeeping
- safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to perform precision mechanical measurement. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>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.</p>
<p>Context of and specific resources for assessment</p>	<p>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.</p> <p>This unit could be assessed in conjunction with other units addressing the safety, quality, communication, materials handling, recording and reporting associated with precision mechanical measurement or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p>Method of assessment</p>	<p>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 should not require language, literacy and numeracy skills beyond those required in this unit. 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.</p>

EVIDENCE GUIDE

Guidance information for assessment	
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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.

Equipment

Strip gauges, engineering squares, angle dekkors, sine bars, angle gauges, polygons, dividing heads, rotary tables, precision levels, micrometers, height gauges, hardness testers, and texture measuring equipment

Appropriate measuring techniques

Includes considerations of the suitability of the environmental conditions for measurements being taken

Measurements

Length, circular, straightness, flatness, hardness, angles, finishes, textures, roundness, squareness, alignment and coordinate measurement etc. on components or equipment

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units	
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Co-requisite units		

Competency field

Competency field	Measurement
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