



Australian Government

MEM12019 Measure components using coordinate measuring machines

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MEM12019B Measure components using coordinate measuring machines

Application

This unit of competency defines the skills and knowledge required to operate coordinate measuring machines (CMM) in a production environment, including basic setting up of components and manually aligning probes.

Where other machines/processes are to be adjusted as a consequence of the CMM operation, appropriate machining/process operation units should also be selected.

Where basic operation excludes setting up components and manually aligning probes is required unit MEM07024 Operate and monitor machine and process should also be selected.

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

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of tools is required unit MEM18001 Use hand tools 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

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

Competency Field

Measurement

Elements and Performance Criteria

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 from specifications, sketches, job sheets or work instructions
2	Load components	2.1	Undertake pre-start checks in accordance with SOPs
		2.2	Observe correct safety procedures and check safety equipment for correct operation
		2.3	Select correct fixture/clamping device
		2.4	Load and clamp component and fixtures in accordance with SOPs
3	Set probes	3.1	Check probe configuration in accordance with specifications
		3.2	Take pre-measurement manual hits to determine probe alignment in accordance with SOPs
4	Measure components	4.1	Select, run and verify part program, as required
		4.2	Measure components utilising appropriate measuring devices
		4.3	Interpret results and identify and report non-conforming/out-of-tolerance measurements
		4.4	Shut down part program and remove components
		4.5	Leave coordinate measuring machine, accessories and surrounds in a clean, safe condition

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.

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

- solid trigger probes
- electronic trigger probes

Measure components includes the following:

- are limited to those which can be measured directly and do not require measurements to be constructed mathematically

Coordinate measurement machines include one (1) or more of the following:

- manual machines
- machines fitted with microprocessors

Unit Mapping Information

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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 MEM12019 Measure components using coordinate measuring machines

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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
- identifying and interpreting specifications and sketches for selecting appropriate methods for measuring components using coordinate measuring machines (CMM)
- selecting and loading components and fixtures using appropriate fixture/clamping device
- setting and manually aligning probes in accordance with specifications
- selecting and activating part programs, as required, where machine is fitted with microprocessors and measuring components and interpreting results and reporting all anomalies in accordance with SOPs
- shutting down part program and removing components and cleaning CMMs.

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)
- task-related information on job sheets or equivalent
- pre-start checks
- fixtures/clamping devices, methods and their uses
- storage location and procedures
- procedures for undertaking pre-measurement manual hits for manual alignment and checking probe configuration
- procedures for running and verifying part program
- procedures, methods/techniques for interpreting results and reporting results and recommendations for adjustment
- effects of contamination
- procedures for shutting down part program
- safe removal and handling of components procedures.

Assessment Conditions

- Assessors must:
 - have vocational competency in measuring components using coordinate measuring machines 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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