



Australian Government

Department of Education, Employment and Workplace Relations

MEM12019B Measure components using coordinate measuring machines

Release: 1

MEM12019B Measure components using coordinate measuring machines

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers operating coordinate measuring machines (CMM) in a production environment. The unit also covers basic setting up of components and manually aligning probes.
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Application of the Unit

Application of the unit	This unit applies where the operator is following established processes, practices and standard operating procedures and is responsible for providing dimensional detail required for adjustment or checking of the manufacturing process. Work is carried out autonomously using predetermined standards of quality and safety. Operators would be expected to have competence in basic setting and adjusting of machines. An appropriate level of measurement skill should be selected with this unit. Where it is required to use tools, then unit MEM08001B (Use hand tools) should also be selected. Where basic operation excludes setting up components and manually aligning probes, Unit MEM07024B (Operate and monitor machine/process) should be selected. Where other machines/processes are to be adjusted as a consequence of the CMM operation, appropriate machining/process operation units should also be selected. Band: A Unit Weight: 4
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

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. Identify job requirements	1.1. Job sheets or equivalent instructions are interpreted correctly.
2. Load components	2.1. Pre-start checks are undertaken to standard operating procedures. 2.2. Correct safety procedures are observed and safety equipment is checked for correct operation. 2.3. Correct fixture/clamping device is selected. 2.4. Component and fixtures are loaded and clamped in accordance with standard operating procedures.
3. Set probes	3.1. Probe configuration is checked in accordance with standard operating procedures. 3.2. Pre-measurement manual hits are taken for manual alignment in accordance with standard operating procedures.
4. Measure components	4.1. Part program is selected as required, run and verified according to standard operating procedures. 4.2. Components are measured according to standard operating procedures. 4.3. Results are interpreted and non-conforming/out of tolerance measurements are identified and reported. 4.4. Part program is correctly shut down and components are removed according to standard operating procedures. 4.5. Coordinate measuring machine, accessories and surrounds are left in a clean, safe condition.

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 following routine, familiar information for loading, setting probes and measuring components
- identifying and following pre-start check procedure

REQUIRED SKILLS AND KNOWLEDGE

- following safety procedures
- selecting specified fixture/clamping device
- positioning and clamping components
- taking manual hits and determining probe alignment
- verifying probe/s configuration to specifications
- selecting and activating part programs as required where machine is fitted with microprocessors
- verifying and confirming correct program operation
- applying correct measuring techniques
- reporting out of tolerance measurements
- shutting down the part program
- removing and handling components
- cleaning machine and site
- following verbal instructions
- orally reporting routine information

Required knowledge

Look for evidence that confirms knowledge of:

- task-related information on job sheets or equivalent
- pre-start checks
- hazards and control measures associated with operating a CMM, including housekeeping
- use and application of personal protective equipment
- safe work practices and procedures
- fixtures/clamping devices and their uses
- storage location and procedures
- fixing/clamping methods
- procedures for undertaking pre-measurement manual hits for manual alignment
- procedures for checking probe configuration
- procedures for running and verifying part program
- methods/techniques for interpreting results
- procedures for reporting results and recommendations for adjustment
- procedures for shutting down part program
- procedures to safely remove and handle components
- required cleaning tasks and the importance of cleaning the CMM
- effects of contamination

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 measure components using a coordinate measuring machine in accordance with instructions.
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 measuring components using a coordinate measuring machine 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.
Guidance information for	

EVIDENCE GUIDE**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.

Probe

Solid or electronic trigger probes

Measurements

Are limited to those which can be measured directly and do not require to be constructed mathematically

Coordinate measurement machine

Manual machines and machines fitted with microprocessors

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Competency field

Competency field	Measurement
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