



Australian Government

Department of Education, Employment and Workplace Relations

MEM12022B Program coordinate measuring machines (advanced)

Release: 1

MEM12022B Program coordinate measuring machines (advanced)

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers writing, trialling and editing programs for coordinate measuring machines to measure features of parts in multiple planes using multiple probes.
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Application of the Unit

Application of the unit	<p>The skills in this unit extend to writing programs to measure features of parts in multiple planes using multiple probes. The program produced may be used on a range of coordinate measuring machines and would be suitably archived and backed up. Programs are trialled and edited as necessary. Work would be undertaken autonomously using predetermined standards of quality.</p> <p>For programming using single probes in a single plane, Unit MEM12021B (Program coordinate measuring machines) should be selected.</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	MEM09002B	Interpret technical drawing
	MEM12003B	Perform precision mechanical measurement
	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. Determine program requirements	1.1.Part parameters and measurement requirements are determined. 1.2.Program attributes are established according to standard operating procedures.
2. Determine probe configuration for multiple probes	2.1.Probe configuration is determined according to standard operating procedures. 2.2.Probe angles are determined and multiple probes are qualified.
3. Create multiple Direct Computer Control (DCC) alignment	3.1.Multiple DCC alignment is created according to standard operating procedures. 3.2.DCC sub-routines are integrated.
4. Construct advanced geometric features	4.1.Geometric features are determined and constructed. 4.2.Features are dimensioned according to standard operating procedures.
5. Review and maintain part programs/system	5.1.Part programs are reviewed/edited to comply with changes to specifications. 5.2.System wide options are changed. 5.3.Programs are archived and backed up according to standard operating procedures. 5.4.Results are output to various formats according to 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: <ul style="list-style-type: none"> determining program parameters from written job instructions, specifications, charts, lists, drawings and other applicable reference documents selecting the correct units for the job requirements selecting suitable probes and determining probe configuration determining and qualifying probe angles for each probe creating multiple DCC alignment

REQUIRED SKILLS AND KNOWLEDGE

- integrating new and/or existing DCC sub-routines
- constructing geometric features for the program
- reviewing and editing program to specification
- changing system wide operations to ensure the most efficient operation of the program
- checking that the integrity of the system is maintained
- archiving and backing up
- outputting results output to printer, disc or other formats
- planning and sequencing operations/processes
- checking and clarifying information
- completing workplace documents and short reports
- checking for conformance to specifications
- undertaking calculations for determining program parameters and checking tolerances
- undertaking numerical operations, geometry and calculations/formulae within the scope of this unit
- following verbal instructions
- orally reporting information

Required knowledge

Look for evidence that confirms knowledge of:

- program specifications
- the procedure for producing the program
- the parameters for selecting attributes
- the reason for selecting multiple probes
- the procedure for determining multiple probe configuration
- the procedure for determining probe angles
- the qualification procedure
- the procedure for creating DCC alignment
- the critical differences between single and multiple DCC alignment
- problems due to integrating sub-routines
- advantages gained through integration of DCC sub-routines
- the procedure for constructing geometric features
- reasons for constructing features in the sequence followed
- the procedure for ensuring the dimensioning techniques comply with relevant standards
- the procedure for ensuring all notes/instructions are clear and logical
- the procedures and parameters for editing, archiving and backing up programs
- the effects of editing particular sections of the program
- the effects on other programs of changing software or hardware options

REQUIRED SKILLS AND KNOWLEDGE

- the procedures for changing system-wide options
- the list of recipients or those with access rights to the programs
- the procedures for producing/storing results/reports
- the procedure for notifying personnel of completion of the program is explained
- techniques, tools and equipment to measure components
- hazards and control measures associated with advanced CMM programming, including housekeeping
- use and application of personal protective equipment
- safe work practices and procedures

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 perform advanced programming of a coordinate measuring machine. 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 advanced programming of 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 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.

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.

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Measurement
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