



Australian Government

MEM12022 Program coordinate measuring machines (advanced)

Release: 1

MEM12022 Program coordinate measuring machines (advanced)

Modification History

Release 1. Supersedes and is equivalent to MEM12022B Program coordinate measuring machines (advanced)

Application

This unit of competency defines the skills and knowledge required to write, trial and edit programs for a range of coordinate measuring machines (CMMs) to measure features of parts in multiple planes using multiple probes.

Where programming using single probes in a single plane is required unit MEM12021 Program coordinate measuring machines should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 2

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
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.
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1	Determine job	1.1	Follow standard operating procedures (SOPs)
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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	requirements	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, drawings, job sheets or work instructions
		1.5	Determine part parameters and measurement requirements
		1.6	Establish program attributes according to SOPs
2	Determine probe configuration for multiple probes	2.1	Determine probe configuration
		2.2	Determine probe angles and qualify multiple probes
3	Create multiple direct computer control (DCC) alignment	3.1	Create multiple DCC alignment according to SOPs
		3.2	Integrate DCC sub-routines
4	Construct advanced geometric features	4.1	Determine and construct geometric features
		4.2	Dimension features according to specifications
5	Review and maintain part programs/system	5.1	Review/edit part programs to comply with changes to specifications
		5.2	Change system wide options
		5.3	Output results to various formats according to SOPs
		5.4	Archive and back up programs

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

No range of conditions provided for this unit.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM12022B Program coordinate measuring machines (advanced)

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 MEM12022 Program coordinate measuring machines (advanced)

Modification History

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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
- determining program parameters from job instructions, specifications, charts, lists, drawing and other applicable reference documents
- selecting suitable probes and determining probe configuration and determining and qualifying probe angles in accordance with SOPs
- undertaking numerical operations, geometry and calculations/formula for determining program parameters and checking tolerances
- demonstrating the correct procedure for creating multiple direct computer control (DCC) alignment and integrating new and existing DCC sub-routines
- constructing geometric features for the program and reviewing and editing program to specification
- changing system-wide operations to ensure the most efficient operation of the program
- outputting results to various formats, including printer, disc or other format and backing up and archiving program, as required.

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)
- program specifications
- procedure for producing the program
- parameters for selecting attributes
- procedures for determining multiple probe configuration and probe angles and reasons for selection
- qualification procedure
- procedure for creating DCC alignment
- critical differences between single and multiple DCC alignment
- problems due to integrating sub-routines

- advantages gained through integration of DCC sub-routines
- procedure for constructing geometric features in the sequence followed and reasons that apply
- procedure for ensuring the dimensioning techniques comply with relevant standards
- procedure for ensuring all notes/instructions are clear and logical
- procedures and parameters for editing, archiving and backing up programs
- effects of editing particular sections of the program
- effects on other programs of changing software or hardware options
- procedures for changing system-wide options
- list of recipients or those with access rights to the programs
- procedures for producing/storing results/reports
- procedure for notifying personnel of completion of the program is explained
- techniques, tools and equipment to measure components.

Assessment Conditions

- Assessors must:
 - have vocational competency in programming coordinate measuring machines (advanced) 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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