



Australian Government

Department of Education, Employment and Workplace Relations

MEM07022C Program CNC wire cut machines

Release: 2

MEM07022C Program CNC wire cut machines

Modification History

Single band identifier removed to clarify dual status

Unit Descriptor

Unit descriptor	This unit covers writing and trialling a program for a range of CNC wire cut machines. Programming includes 2 axis tool paths, 4 axis conical cutting, and auto multi-cavity work pieces.
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Application of the Unit

Application of the unit	<p>This unit extends to programming a range of CNC wire cut machines. Programming includes 2 axis tool paths, 4 axis conical cutting, and auto multi-cavity work pieces. Technical difficulties are resolved in consultation with appropriate technical advisers. Work is carried out autonomously using predetermined standards of quality and safety.</p> <p>Band:</p> <p>This unit has dual status and is to be regarded as both a specialisation band A unit and Specialisation band B unit for progression to C7 (AQF level IV).</p> <p>Unit Weight: 2</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM07005C	Perform general machining
	MEM07015B	Set computer controlled machines/processes
	MEM07016C	Set and edit computer controlled machines/processes
	MEM07018C	Write basic NC/CNC programs
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
Path 2	MEM07015B	Set computer controlled machines/processes
	MEM07016C	Set and edit computer controlled machines/processes
	MEM07018C	Write basic NC/CNC programs
	MEM07024B	Operate and monitor machine/process
	MEM07028B	Operate computer controlled machines/processes
	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools

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. Write program	<p>1.1.Engineering drawings are understood and interpreted to define optimum tool path geometry.</p> <p>1.2.Tool path is programmed using advanced operations, canned cycles and sub-routines or other appropriate sub-routines within system.</p> <p>1.3.Program is written in standard code format, and confirmed and edited as necessary using appropriate routine and standard operating procedures.</p> <p>1.4.Program is stored in accordance with standard operating procedures.</p> <p>1.5.Operation sheet is produced to standard operating procedures.</p>
2. Trial program	<p>2.1.Program is downloaded, and machining parameters that may include wire offset, wire speed, power settings are selected.</p> <p>2.2.Machine is prepared, work piece are loaded and aligned, datum and reference points are established in accordance with standard operating procedures.</p> <p>2.3.Machine is operated in appropriate mode to test and prove program, work piece positioning.</p> <p>2.4.Finished components are checked for conformance with drawing specifications.</p>

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:

- interpreting drawings, specifications and instructions
- calculating coordinates of all relevant points on the part or product to be produced
- storing programs
- producing NC/CNC operation sheet(s)
- downloading and verifying NC/CNC program
- setting machine parameters

REQUIRED SKILLS AND KNOWLEDGE

- mounting work holding fixtures/ devices/tools
- testing and proving NC/CNC program
- checking parts or products produced for conformance with specifications

Required knowledge

Look for evidence that confirms knowledge of:

- the operations to be controlled by the program to be written
- the tool path(s) to be followed when producing the part or product
- the sequence of operations to be programmed
- the reasons for selecting the chosen tool path(s) and sequence of operations
- the zero point of the wire cut machine
- the canned cycles and sub-routines accessible in the particular NC/CNC machine
- the application of each canned cycle and sub-routine available
- where appropriate, the canned cycles and/or sub-routines to be used in the NC/CNC program
- the reasons for selecting the chosen canned cycles and/or sub-routines
- the standard codes used in the writing of NC/CNC programs
- the applications of standard codes in NC/CNC programming
- procedures for writing NC/CNC programs in standard code format
- procedures for storing NC/CNC programs
- procedures for completing NC/CNC operation sheets
- the information to be included in NC/CNC operation sheets
- procedures for downloading NC/CNC programs
- procedures for verifying downloaded NC/CNC programs
- the machining parameters that may be entered into the machine controller
- the effect of varying the machining parameters on the product or part produced
- work holding fixtures/devices/tools
- procedures for mounting work holding fixtures/devices tools
- the location of the required work holding fixtures/devices/tools relative to the machine datum or zero
- purpose of datum setting
- pre-start checks
- safety features and equipment of the NC/CNC machine
- the purpose and function of the safety features and/or equipment
- the machine mode appropriate to the testing and proving of the NC/CNC program and the checking of the position of the work piece
- the procedures to be followed when using the machine in this mode
- the relative position of the work piece to the machine datum or zero
- the specifications of the part or product
- the measuring equipment/techniques to be used to check for conformance to

REQUIRED SKILLS AND KNOWLEDGE

specification

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 programming of CNC wire cut machines. 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 programming of CNC wire cut machines 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.

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.

Program

Includes setting of speeds, tolerances, taper angles, macros, nesting tool paths, chained linear tool paths and differential profiles

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

Competency field

Competency field	Machine and process operations
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