



Australian Government

Department of Education, Employment and Workplace Relations

MEM07006C Perform lathe operations

Release: 1

MEM07006C Perform lathe operations

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency covers performing machining operations on a lathe to produce components to required tolerances and specifications using all types of accessories except for the use of taper turning attachment and copy turning attachments. The unit does not cover turning of multi-start threads.
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Application of the Unit

Application of the unit	This unit of competency applies to the production of components using centre lathes and lathe accessories, precision measuring equipment and cutting tools on a range of standard engineering materials. It does not include use of a taper turning attachment, copy turning attachment or multi-start threads. Work is performed to established processes, practices and specifications. Cutting tools are selected using International Standard Organisation (ISO) standards or according to standard operating procedure as appropriate. Work is performed to drawings, sketches, specifications and instructions as appropriate. This unit has been developed for Engineering Tradesperson - Mechanical apprenticeship training and the recognition of trade level skills in lathe operations. Skills covered by this unit are generally applied in occupational and work situations associated with trade level fitting and machining work. This unit has application in the MEM30205 Certificate III in Engineering - Mechanical qualification and other qualifications requiring a trade level of lathe operation skills. Lathe operations may also be known as turning and the processes and associated level of skill covered by this unit are often described in industry by the term '1st Class Machining'. Band: A Unit Weight: 4
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM07005C	Perform general machining
	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. Observe safety precautions	1.1. Correct safety procedures are observed and protective clothing and safety glasses worn
2. Determine job requirements	2.1. Drawings are interpreted, sequence of operation is determined and tooling is selected to produce component to specification
3. Mount job	3.1. Job is set up using instruments such as dial test indicators, and digital read-out equipment
4. Perform turning operations	4.1. Speeds and feeds are calculated using appropriate mathematical techniques and reference material 4.2. The full range of accessories on a centre lathe are used including three and four jaw chucks, centres, face plate, steadies, cross slide and tailstock 4.3. Turning operations are performed to specification
5. Check components for conformance with specifications	5.1. Components are checked for conformance to specification using appropriate techniques, tools and equipment

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- interpreting technical drawings/specifications in relation to turning
- setting up jobs using appropriate equipment
- calculating and setting cutting feeds and speeds appropriate to the job
- checking that job is concentric and running true
- safely operating lathes
- performing turning operations

Required knowledge

Required knowledge includes:

- sequence of operations to achieve the job requirements
- tool type and geometry to achieve the required specifications and for work pieces

REQUIRED SKILLS AND KNOWLEDGE

- of different materials
- numerical operations, geometry and calculations/formulae within the scope of this unit
- the consequences of varying speeds and feeds from the optimum rates calculated
- characteristics of different materials and their effects on cutting speeds and feeds
- application of lathe accessories
- techniques, tools and equipment to measure materials and machined components
- use and application of personal protective equipment
- safe work practices and procedures
- hazards and control measures associated with lathe operations

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 a variety of lathe operations to specifications. 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 apply the skills covered in this unit of competency in new and different situations and contexts. Critical aspects of assessment and evidence include:

- determining requirements for turning job including quantity, material, measurements and tolerances
- correct job planning including identifying required measuring equipment, tooling, accessories and sequence of operations
- correct preparation of high speed steel tooling
- correct fixing of job and tooling
- calculating and setting of required speeds and feeds
- correct monitoring of turning operation
- turning undertaken to trade standard in terms of time and responsibility for own work
- undertaking correct remedial procedures for out of specification results as per enterprise procedures e.g. procedures for scrapping or reworking of components not turned to specification.

Context of and specific resources for assessment

This unit has been developed to support training in and recognition of trade level competency in lathe operations as applied to a trade level fitting and machining work environment. Assessment should emphasise a workplace context and procedures found in the candidate's workplace.

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.

Method of assessment

Typically, persons engaged in Engineering Tradesperson - Mechanical work are required to apply their lathe

EVIDENCE GUIDE

	operations skills and techniques across a range of jobs and specifications. A single assessment event is not appropriate. On the job assessment should be included as part of the assessment process wherever possible. Where assessment occurs off the job, judgement must consider evidence of the candidate's performance in a productive work environment that includes a sufficient range of appropriate tasks and materials to cover the scope of application for this unit. 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 assessment	This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with lathe operations or other units requiring the exercise of the skills and knowledge covered by 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.

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

RANGE STATEMENT	
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.	
Drawings	Drawings include engineering drawings to AS 1100/1102
Tooling	Tooling includes: • high speed steel, tungsten carbide, ceramic graphite and other standard cutting tools • boring bars • drills • reamers • thread chasers • tapping heads • taps
Instruments	Instruments may include: • manual and digital micrometers • vernier calipers • dial indicators • scribing blocks
Speeds and feeds	Speeds and feeds may include: • setting up machine • changing gears and speeds • use of lead screw • calculations
Accessories	Accessories may include: • three and four jaw chucks • centres • face plate • steadies • cross slide • tailstock
Turning operations	Turning operations may include: • manual parallel and taper turning • internal and external turning including boring drilling, reaming, single start thread cutting and parting off

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Machine and process operations
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