

Training Package	Metal and Engineering (MEM05)			HSC Requirements and Advice
Title	Use workshop machines for basic operations			
Unit code	Competency field	Band	Unit weight	HSC Indicative Hours
MEM07032B	Machine and process operations	A	2	25

Unit descriptor	This unit covers basic machining in a maintenance or jobbing environment.
Prerequisites	MEM18001C Use hand tools
Application of the competency	The unit applies to machines that include but are not limited to lathe, radial arm drill, mills etc, and covers the sharpening of tools as required.
Related units	This unit should not be selected when Unit MEM07005B (Perform general machining) or Unit MEM07024B (Operate and monitor machine/process) have already been selected. For hand held/power tools use Unit MEM18002B (Use power tools/hand held operations).

Evidence Guide

The evidence guide specifies the evidence required to demonstrate achievement in the unit of competency as a whole. It must be read in conjunction with the unit descriptor, performance criteria, range statement and the assessment guidelines for the Metal and Engineering Training Package.

Overview of assessment requirements	Context of assessment	Interdependent assessment	Method of assessment
A person who demonstrates competency in this unit must be able to use workshop machines for basic operations. Competency in this unit cannot be claimed until all prerequisites have been satisfied.	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 using workshop machines for basic operations or other units requiring the exercise of the skills and knowledge covered by 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.

Evidence Guide cont/d			HSC Requirements and Advice
Consistency of performance	Required skills	Required knowledge	Key Terms and Concepts
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.	<p>Look for evidence that confirms skills in:</p> <ul style="list-style-type: none"> • reading, interpreting and following routine and familiar information on written job instructions, standard operating procedures and other applicable reference documents • selecting the appropriate machine for the given task • setting up machines and tooling within the scope of this unit, including speeds and feeds • sharpening tools within the scope of this unit • operating machines within the scope of this unit • checking finished components • checking and clarifying task-related information • measuring components to specification within the scope of this unit. 	<p>Look for evidence that confirms knowledge of:</p> <ul style="list-style-type: none"> • cutting tool sharpening methods and techniques • tool geometry within the scope of this unit • units of measurement, tool geometry and numerical operations within the scope of this unit • safe operation of tool sharpening equipment • consequences of incorrect sharpening • machine set-up • consequences of incorrect speeds and feeds • procedures for operating workshop machines • reasons for poor surface finish • hazards and control measures • use and application of personal protective equipment • safe work practices and procedures. 	<ul style="list-style-type: none"> • accuracy checks • basic machining • clamping device • communication • compliance tests/checks • install tools • job requirements • lathe • methods and techniques for sharpening cutting tools • mill • mount and secure materials • non-conformance to specifications • personal protective equipment (PPE) • radial arm drill • safe work practices and procedures • selection of machine and tools appropriate to task • set and adjust guards • specifications • speeds and feeds • standard operating procedures (SOP) • surface finish • tool geometry • tools • work instructions and procedures • working knowledge/operation of machines • workshop machines.

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
1 Identify job requirements	1.1 Job requirements are interpreted from work instructions and standard operating procedures.	<p>The range statement provides information about the context in which the unit of competency is carried out. The variables [in bold] and scope [dot points] cater for different work requirements, work practices and knowledge between States, Territories and the Commonwealth, and between organisations and workplaces. The range statement relates to the unit as a whole and provides a focus for assessment. Text in italics in the performance criteria is explained here.</p> <p>The following variables may be present and <i>may include</i>, but are not limited to, the examples listed under the scope. All work is undertaken to relevant legislative requirements, where applicable.</p>	<p>Learning experiences for the HSC must address:</p> <p>A range of sources for work instructions and procedures including:</p> <ul style="list-style-type: none"> • work schedules • job card/sheet/plans/specifications • standard operating procedures (SOP) • standard operation sheets • Material Safety Data Sheets (MSDS) • drawings/diagrams/sketches • plans • regulations/legislation • manufacturing workplace guidelines, policies and procedures • Australian Standards. <p>An awareness of various modes of communication to receive work instructions including:</p> <ul style="list-style-type: none"> • verbal <ul style="list-style-type: none"> - face to face (supervisor to employee) - telephone/mobile phone - workplace meetings • written communication <ul style="list-style-type: none"> - work plans - drawings - memos/messages - job descriptions/statements - workplace forms - rosters • non-verbal <ul style="list-style-type: none"> - signage - diagrams. <p>Safe work practices and procedures.</p> <p>Hazard identification and risk control.</p> <p>Planning and preparation for a range of basic machining tasks in a maintenance or jobbing environment.</p> <p>A basic overview of the role of employees in quality assurance.</p>

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
	1.2 Appropriate <i>machine</i> is selected to meet requirements.	Machines <ul style="list-style-type: none"> • lathe, radial arm drill, mill etc. 	Units of measurement and numerical operations within the scope of the unit of competency. Learning experiences for the HSC must address: Consideration/s for the selection of machines including: <ul style="list-style-type: none"> • skills/training • time • cost • occupational health and safety (OHS) requirements • appropriateness for purpose. Working knowledge of a range of workshop machines including: <ul style="list-style-type: none"> • lathe • radial arm drill • mill.
2 Set up machine	2.1 Tools are selected appropriate to the work requirements.		Learning experiences for the HSC must address: Correct use/application of a range of tooling appropriate for basic machining of engineering components.
	2.2 <i>Cutting tools</i> are sharpened as required.	Cutting tools <ul style="list-style-type: none"> • lathe tools, milling cutters, drills etc. 	Learning experiences for the HSC must address: A basic understanding of tool geometry. An awareness of how worn/damaged cutting tools can be identified including: <ul style="list-style-type: none"> • visual checks • dimensional checks. Knowledge of cutting-tool sharpening methods and techniques to correct geometry. SOP for tool sharpening equipment. Techniques for checking the accuracy of tool geometry and sharpness including use of: <ul style="list-style-type: none"> • templates • gauges.

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
			An awareness of: <ul style="list-style-type: none"> the benefits of using correctly sharpened tools the consequences of incorrect tool sharpening.
	2.3 Tools are correctly installed using standard operating procedures.		Learning experiences for the HSC must address: Knowledge of machine and tooling set-up procedures.
	2.4 Guards are set and adjusted as required.		
3 Operate machine	3.1 <i>Material</i> to be machined is mounted and secured using <i>clamping device</i> appropriate to the material and work requirements.	Materials <ul style="list-style-type: none"> ferrous and non ferrous. Clamping device <ul style="list-style-type: none"> chucks, vices, clamps, bars and packing etc. 	Learning experiences for the HSC must address: A range of clamping devices and their appropriateness for a range of materials. Techniques for mounting and securing a range of materials.
	3.2 Machine is operated correctly to suit work and material requirements.		Learning experiences for the HSC must address: Safe work practices for using tools and equipment including: <ul style="list-style-type: none"> following SOP and manufacturer's specifications before, during and after use risk management (identifying hazards and implementing control measures) correct manual handling safe handling, application and storage of hazardous substances appropriate use of personal protective equipment (PPE) regular servicing and maintenance of tools and equipment selection of appropriate tool for use working with electricity in a safe manner adequate ventilation attaching appropriate safety guards where required. Use and application of a range of PPE including: <ul style="list-style-type: none"> footwear head protection gloves

Elements	Performance criteria	Range Statement	HSC Requirements and Advice
			<ul style="list-style-type: none"> • protective clothing • respirator • face mask/shield • hearing protection • eye protection. <p>The importance of correct fitting PPE.</p> <p>Knowledge of speeds and feeds appropriate to the task.</p> <p>An awareness of the consequences of incorrect machine set-up.</p> <p>SOP for operating workshop machines including:</p> <ul style="list-style-type: none"> • lathe • radial arm drill • mill.
4 Check finished component	4.1 Machined component is checked against work requirements and predetermined finish.		<p>Learning experiences for the HSC must address:</p> <p>Reasons for poor surface finish.</p> <p>Knowledge of compliance tests/checks to be undertaken to ensure quality assurance of finished product.</p> <p>SOP for non-conformance of machined component to specifications.</p>