



Australian Government

MEM18015 Maintain tools and dies

Release: 2

MEM18015 Maintain tools and dies

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18015 Maintain tools and dies (Release 1).

Release 1. Supersedes and is equivalent to MEM18015B Maintain tools and dies.

Application

This unit of competency defines the skills and knowledge required to maintain tools and dies.

It covers identifying and analysing defects in tooling, disassembling and assessing tooling components, manufacturing or repairing tooling components to conform to specifications, and assembling tooling components. Potential production/maintenance problems are also identified.

Where simple maintenance not requiring precision repair is required unit MEM18006 Perform precision fitting of engineering components should be selected.

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

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM06007	Perform basic incidental heat/quenching, tempering and annealing
MEM07005	Perform general machining
MEM07006	Perform lathe operations
MEM07007	Perform milling operations
MEM07008	Perform grinding operations
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations

MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18003	Use tools for precision work
MEM18006	Perform precision fitting of engineering components
MEM18055	Dismantle, replace and assemble engineering components

Competency Field

Maintenance and diagnostics

Elements and Performance Criteria

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		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
2	Identify and analyse defects in tooling	2.1	Determine defects from production components produced, production reports or tool inspections
		2.2	Plan sequence of maintenance operations
3	Disassemble and assess tooling	3.1	Disassemble tooling and assess condition of components against prints, drawings and manufacturers' drawings

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	components	3.2	Replace/recondition worn/damaged parts
4	Manufacture/repair and assemble tooling components	4.1	Obtain materials to meet tooling requirements
		4.2	Select and use appropriate hand and hand held power tools
		4.3	Choose appropriate machining process from a range of standard tool room machines
		4.4	Set machining parameters to produce components to specification
		4.5	Initiate heat treatment according to specification, where appropriate
		4.6	Check tooling components and assemble in conformance with specifications and procedures
		4.7	Check production components to ensure compliance to specifications, as required
5	Identify potential production/maintenance problems	5.1	Identify and record conditions leading to tooling failure
		5.2	Identify recurrent faults and initiate solutions

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

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Tooling includes one (1) or more of the following:

- press tools
- plastic moulds
- forging dies
- die casting
- jigs
- fixtures
- gauges

Tool room equipment includes one (1) or more of the following:

- lathes
- mills
- grinders
- hand and power tools used for precision work

Unit Mapping Information

Release 2. Supersedes and is equivalent to MEM18015 Maintain tools and dies (Release 1).

Release 1. Supersedes and is equivalent to MEM18015B Maintain tools and dies.

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 MEM18015 Maintain tools and dies

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM18015 Maintain tools and dies (Release 1).

Release 1. Supersedes and is equivalent to MEM18015B Maintain tools and dies.

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
- identifying and interpreting specifications, drawings and sample products/components to maintain tools and dies
- examining defective tooling for breakage, wear and defects requiring precision repair
- disassembling the defective tooling in accordance with acceptable tool making techniques and procedures and marking worn/damaged components for repair or replacement
- obtaining appropriate materials for manufacture of replacement tooling components and testing for hardness
- using appropriate hand and hand held power tools to fashion/manufacture tooling components to specifications and utilising sample components or sections to test tooling components being manufactured
- shaping and producing the tooling components to specifications using appropriate machines and machine processes and initiating heat treatment, where required
- assembling and fitting all tooling components to specifications using acceptable tool making techniques and procedures
- using precision instruments to check the first-off component/product for compliance to specifications
- recording the conditions that lead to the failure of a given set of tooling and initiating design modifications/alterations to rectify recurring faults or failure.

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)
- common tooling defects from a range of sample products/components and reasons and probable causes of tooling failure
- reasons for establishing a sequential plan for the repair/maintenance of defective tooling
- procedures for:
 - documenting plans for the repair/maintenance of defective tooling

- disassembling defective tooling
- identifying worn/damaged tooling and components for repair or replacement
- obtaining/selecting the chosen materials in terms of strength, durability, component finish, heat treatment requirement, availability and reasons for selection
- hardness testing materials
- initiating the heat treatment of tool steels and components and heat treatment requirements to achieve specified hardness
- fitting/assembling the tooling components and precautions to be taken
- fitting/assembling the tooling components
- documenting the chosen mode of tooling failures
- initiating modifications/alterations to tooling design
- specifications of all tooling components
- precision instruments to be used to check tooling components for conformance to specification and reasons for selection
- reasons for deciding to repair or replace worn/damaged components
- appropriate materials, including physical properties for each component of the tooling to be replaced
- hand and hand held power tools to be used to fashion/manufacture the required tooling components and reasons for selection
- appropriate machines and machining processes to shape/produce the required tooling components and reasons for selection
- effect of machining parameters on the surface finish and tolerances achievable from machining processes for given machining tasks and specifications
- reasons for heat treating the tool steel in accordance with heat treatment procedures and specifications
- appropriate precision instruments for checking the components produced
- specifications of the finished product
- common causes of tooling failure and conditions leading to the failure of a given set of tooling
- previous faults with the given set of tooling
- any commonalities of causes of failures or trends/events associated with tooling failure and proposed solutions for a range of recurrent faults that may occur in tooling and reasons for selection.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining tools and dies 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.

- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including 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.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>