



**Australian Government**

# **MEM04036 Maintain patterns**

**Release: 1**

# MEM04036 Maintain patterns

## Modification History

Release 1. New unit.

## Application

This unit of competency defines the skills and knowledge required to maintain casting and moulding patterns.

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

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

Band: A

Unit Weight: 2

## Pre-requisite Unit

MEM04018 Perform general woodworking machine operations

MEM09002 Interpret technical drawing

MEM11011 Undertake manual handling

MEM12006 Mark off/out (general engineering)

MEM12023 Perform engineering measurements

MEM12024 Perform computations

MEM12026 Perform advanced trade calculations in a manufacturing, engineering or related environment

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

## Competency Field

Casting and moulding

## Elements and Performance Criteria

| Elements | Performance Criteria |
|----------|----------------------|
|----------|----------------------|

| <i>Elements describe the essential outcomes.</i> | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                           |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Determine job requirements                    | 1.1 Follow standard operating procedures (SOPs)<br>1.2 Comply with work health and safety (WHS) requirements at all times<br>1.3 Use appropriate personal protective equipment (PPE) in accordance with SOPs<br>1.4 Identify job requirements from specifications<br>1.5 Plan sequence of maintenance operations |
| 2. Identify and analyse defects in patterns      | 2.1 Determine defects from produced components, production reports or pattern inspections<br>2.2 Disassemble pattern and assess condition of components against prints, drawings and manufacturers' drawings                                                                                                     |
| 3. Repair pattern and reassemble                 | 3.1 Choose appropriate repair process based on assessments<br>3.2 Replace or recondition worn or damaged components to specifications<br>3.3 Check pattern components and assemble for conformance with specifications                                                                                           |
| 4. Identify production/maintenance problems      | 4.1 Check production components to ensure compliance to specifications, as required<br>4.2 Identify and record conditions leading to production faults<br>4.3 Identify recurrent faults and initiate solutions                                                                                                   |

## Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

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.

|                            |                                                            |
|----------------------------|------------------------------------------------------------|
| Specifications include one | <ul style="list-style-type: none"> <li>drawings</li> </ul> |
|----------------------------|------------------------------------------------------------|

|                                                |                                                                                                                                                                                                                                                                |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| or more of the following:                      | <ul style="list-style-type: none"><li>• job sheets</li><li>• work instructions.</li></ul>                                                                                                                                                                      |
| Patterns include one or more of the following: | <ul style="list-style-type: none"><li>• spur gear</li><li>• bevel gear</li><li>• chain gear and sprocket</li><li>• conveyor screw</li><li>• propeller</li><li>• flat back</li><li>• irregular joint</li><li>• turned</li><li>• wheel</li><li>• pipe.</li></ul> |

## Unit Mapping Information

No equivalent unit.

## 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 MEM04036 Maintain patterns

## Modification History

Release 1. New unit.

## Performance Evidence

Evidence required to demonstrate competency in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting specifications, drawings and sample products or components to maintain pattern
- examining defective pattern for breakage, wear and defects requiring precision repair
- disassembling the defective pattern in accordance with tool making techniques and procedures and marking worn or damaged components for repair or replacement
- obtaining appropriate materials for manufacture of replacement pattern components and testing for hardness
- shaping and producing the replacement pattern components to specifications on at least two occasions using appropriate processes
- assembling and fitting all pattern components to specifications on at least two occasions using patternmaking techniques and procedures
- using precision instruments to check the first-off component or product for compliance to specifications on at least two occasions
- recording the conditions that lead to the failure of a pattern and recommending design modifications to rectify recurring faults or failure.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

## 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 pattern defects, common causes of pattern faults and conditions leading to pattern failure
- rectification techniques to restore patterns to specifications
- reasons for establishing a sequential plan for the repair or maintenance of defective pattern
- documenting plans for the repair or maintenance of defective pattern
- disassembling defective pattern
- identifying worn or damaged pattern and components for repair or replacement

- selecting and obtaining materials in terms of strength, durability, component finish, availability and reasons for selection
- fitting and assembling of pattern components and precautions to be taken
- documenting pattern faults
- recommending pattern design modifications
- specifications of pattern components
- precision instruments to be used to check pattern components for conformance to specifications and reasons for selection
- reasons for deciding to repair or replace worn or damaged components
- pattern materials, including physical properties of each component of the pattern to be replaced
- tools to be used to fashion the required replacement pattern components and reasons for selection
- specifications of the finished product
- causes of fault commonalities or trends and events associated with pattern faults and proposed solutions for recurrent faults that may occur in pattern and reasons for selection.
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## Assessment Conditions

- Assessors must:
  - have vocational competency in maintaining patterns 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 that 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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## Links

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