



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM24003B Perform basic magnetic particle testing**

**Release: 1**

## **MEM24003B Perform basic magnetic particle testing**

### **Modification History**

Not Applicable

## Unit Descriptor

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| <b>Unit descriptor</b> | This unit covers performing basic magnetic particle testing procedures in a range of industrial applications. It covers the principles of magnetism and the associated application of basic magnetic particle testing techniques in the field of non-destructive testing. Knowledge of metallurgy associated with the level of application in this unit is required. |
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## Application of the Unit

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| <b>Application of the unit</b> | <p>This unit applies to portable and fixed ('yoke' or 'bench') basic magnetic particle testing techniques on fabrications, structures and components across a wide range of industries.</p> <p>The work can relate to scheduled and unscheduled maintenance activities using general tools and specific magnetic testing equipment as specified in maintenance documentation, testing procedures or operator instructions.</p> <p>Actual and potential defects are considered, together with ongoing abnormalities in fabrications, components and structures. Magnetic particle testing is performed on critical component or structural zones. All testing must be completed with particular attention to personal safety and OH&amp;S regulations. Certification against Australian standards may be achieved where assessment in this unit of competency is carried out in conjunction with an examining authority as described in ISO 9712.</p> <p>Materials and chemicals which are subject to codes and regulations - for example, chemicals, explosives, solvents, dangerous materials, acids, or noxious waste products - must be subject to safe work habits and must be stored and used in accordance with safe work practices.</p> <p>This unit should not be selected when Unit MEM24004B (Perform magnetic particle testing) has already been selected.</p> <p>Where power tools are required, Unit MEM18002B (Use power tools/hand held operations) should also be selected.</p> <p>Where tests require the interpretation of drawings, Unit MEM09002B (Interpret technical drawings) should also</p> |
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|  | <p>be selected.</p> <p><b>Band: A</b></p> <p><b>Unit Weight: 2</b></p> |
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

|                           |           |                |
|---------------------------|-----------|----------------|
| <b>Prerequisite units</b> |           |                |
| <b>Path 1</b>             | MEM18001C | Use hand tools |
|                           |           |                |

## Employability Skills Information

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| <b>Employability skills</b> | This unit contains employability skills. |
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## Elements and Performance Criteria Pre-Content

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| 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. Prepare inspection areas for basic magnetic particle testing | 1.1. Inspection areas are cleaned and prepared for testing using appropriate procedures and materials.<br>1.2. Preparation processes are carried out in accordance with the relevant specifications and OH&S requirements.<br>1.3. Inspection areas are visually assessed and obvious discontinuities are identified.   |
| 2. Perform basic magnetic particle testing                      | 2.1. Nominated 'yoke' or 'bench' magnetic particle testing procedure is identified from standard operating procedures.<br>2.2. Test equipment is prepared in accordance with relevant standards and/or procedures.<br>2.3. Magnetic particle test is carried out in accordance with relevant work instructions and OHS requirements.<br>2.4. Magnetic particle testing equipment is maintained and stored in accordance with standard operating procedures and OH&S requirements. |
| 3. Report the results of magnetic particle test(s)              | 3.1. Basic indications are checked and defects are identified in accordance with enterprise standards and/or procedures.<br>3.2. Basic indications are confirmed in accordance with enterprise standards and/or procedures.<br>3.3. Test results are reported in accordance with enterprise standards and/or procedures.  |

## Required Skills and Knowledge

| <b>REQUIRED SKILLS AND KNOWLEDGE</b>  |
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| This section describes the skills and knowledge required for this unit.   |
| <b>Required skills</b>  |
| Look for evidence that confirms skills in: <ul style="list-style-type: none"> <li>• interpreting and following procedures</li> <li>• identifying inspection areas</li> <li>• identifying discontinuities and defects</li> </ul> |

**REQUIRED SKILLS AND KNOWLEDGE**

- selecting appropriate testing techniques and procedures
- assessing risks
- entering routine and familiar information onto proformas and standard workplace forms
- locating, reading and interpreting information on written job instructions, specifications, charts, lists and other reference documentation
- planning, sequencing operations

**Required knowledge**

Look for evidence that confirms knowledge of:

- surface preparation
- procedures and OH&S requirements in relation to the preparation process
- established assessment procedures and techniques
- types of discontinuities and their consequences
- scope and basic principles of magnetic particle testing
- procedure for carrying out magnetic particle test using either the 'yoke' or 'bench'
- advantages and limitations of magnetic particle testing
- hazards and safety precautions associated with magnetic particle testing
- basic maintenance and storage procedures for testing equipment
- common basic defects
- methods/procedures for reporting test results
- advantages, limitations of various equipment
- magnetic particle application - methods for wet, dry particles
- recording and reporting results of simple tests
- safety precautions in testing
- use of toxic, flammable materials, electrical hazards
- use and application of personal protective equipment
- safe work practices and procedures
- relevant hazards and control measures related to the competency

## Evidence Guide

| <b>EVIDENCE GUIDE</b>   |   |
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| <p>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.</p> |   |
| <p><b>Overview of assessment</b></p>  | <p>A person who demonstrates competency in this unit must be able to perform basic magnetic particle testing. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>  |
| <p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>  | <p>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>   |
| <p><b>Context of and specific resources for assessment</b></p>  | <p>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.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with performing basic magnetic particle testing procedures in a range of industrial applications or other units requiring the exercise of the skills and knowledge covered by this unit.</p> |
| <p><b>Method of assessment</b></p>  | <p>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.</p>   |

**EVIDENCE GUIDE**

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| <b>Guidance information for assessment</b> |  |
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**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.

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|------------------------------|-----------------------------|
| <b>Preparation processes</b> | Surface cleaning and drying |
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**Unit Sector(s)**

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| <b>Unit sector</b> |  |
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**Co-requisite units**

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| <b>Co-requisite units</b> |  |  |
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## Competency field

|                  |                         |
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| Competency field | Non-destructive testing |
|------------------|-------------------------|