



Australian Government

MEM18111 Perform basic magnetic particle testing

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Modification History

Release	Comments
1	This unit of competency was first released in MEM Manufacturing and Engineering Release 5.0.

Application

This unit of competency defines the skills and knowledge required to perform basic magnetic particle testing procedures and techniques in a range of metal fabrication and welding trade related industrial applications including fabrications, structures and components across a wide range of industries.

Magnetic particle testing is performed on critical component or structural zones and actual and potential defects are considered, together with ongoing abnormalities.

This unit should not be selected when unit MEM24024 Undertake magnetic particle tests has already been selected.

Where interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of engineering measurement is required unit MEM12023 Perform engineering measurements should also be selected.

Where the selection and use of power tools are required unit MEM18002 Use power tools/hand held operations should also be selected.

Band: A

Unit Weight: 2

Licensing/Regulatory Information

Assessment as competent against MEM18111 Perform basic magnetic particle testing may contribute to certification against Australian standards where assessment in this unit of competency is carried out in conjunction with an examining authority as described in AS ISO 9712 NDT – Qualification and certification of personnel or subsequent standards.

Pre-requisite unit(s)

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

MEM18001 Use hand tools

Competency field(s)

Maintenance and diagnostics

Unit sector(s)

N/A

Elements and Performance Criteria

Elements	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
2. Prepare inspection areas for basic magnetic particle testing	2.1 Clean inspection areas and prepare for testing using appropriate procedures and materials 2.2 Carry out preparation processes in accordance with the relevant procedures 2.3 Assess inspection areas visually and identify obvious discontinuities
3. Perform basic tests	3.1 Identify nominated 'yoke' or 'bench' magnetic particle testing procedure from SOPs 3.2 Prepare test equipment in accordance with relevant standards and/or procedures 3.3 Carry out magnetic particle test in accordance with relevant work instructions 3.4 Minimise environmental impacts of testing and generation of waste 3.5 Maintain magnetic particle testing equipment and store in accordance with SOPs 3.6 De-magnetise material according to specifications
4. Report the results of magnetic particle tests	4.1 Check and confirm basic indications and identify defects in accordance with organisational standards and/or procedures

	4.2 Report test results in accordance with organisational standards and/or procedures
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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.	
Preparation processes include:	• surface cleaning and drying.
Magnetic media include one (1) or more of the following:	• dry magnetic powders such as iron oxide • wet magnetic powders in a carrier fluid such as colour contrast or fluorescent dyes, hydrocarbons or water; aerosols.
Magnetic particle test equipment includes one (1) or more of the following:	• simple pole magnets • yokes, AC/DC bridges • bench units.

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM18111 Perform basic magnetic particle testing	MEM24003 Perform basic magnetic particle testing	Superseded	Equivalent

Assessment Requirements for MEM18111 Perform basic magnetic particle testing

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Performance Evidence

Evidence required to demonstrate competence 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, charts, lists and other reference documentation for performing basic magnetic particle testing
- preparing the area for testing and identifying discontinuities and defects in accordance with procedures
- selecting appropriate testing techniques and carrying out magnetic particle testing, checking and confirming basic indicators and identifying all defects in accordance with procedures on at least two occasions
- reporting test results in accordance with procedures and customer service requirements on at least two occasions.

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)
- surface preparation, procedures and work health and safety (WHS) requirements in relation to the preparation process
- 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
- basic maintenance and storage procedures for testing equipment

- common basic defects
- methods and/or procedures for reporting test results
- advantages and limitations of various equipment
- magnetic particle application including methods for wet and dry particles
- recording and reporting results of simple tests
- use of toxic and flammable materials
- electrical hazards (at awareness level).

Assessment Conditions

- Assessors must:
 - have vocational competency in performing basic magnetic particle testing at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the current vocational education and training legislation, frameworks and/or standards.
- 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.

Link

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.