

## MEM24005B Perform basic eddy current testing

<b>Unit descriptor</b>	This unit covers operating eddy current testing equipment and performing basic testing procedures in a specific range of industrial applications. Knowledge of metallurgy, electricity, magnetism and electromagnetism associated with the level of application in this unit is required.
<b>Prerequisites</b>	
Path 1	MEM18001C Use hand tools
<b>Competency field</b>	Non-destructive testing
<b>Application of the competency</b>	<p>This unit applies to the preparation and performance of eddy current testing on fabrications, structures and components across a wide range of industries. It includes wheel bead seat, production line, tube production line and conductivity measurement methods. The work can relate to scheduled and unscheduled maintenance activities using general tools and specific eddy current testing equipment as specified in maintenance documentation, testing procedures or operator instructions.</p> <p>Actual and potential defects are to be considered, together with ongoing abnormalities in fabrications, components and structures. Eddy current testing is performed on critical component or structural zones, and may require re-assessment of competency at regular intervals in accordance with relevant standards. 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 – are subject to safe work habits and must be stored and used in accordance with safe work practices.</p>
<b>Related units</b>	<p>This unit should not be selected when Unit MEM24006B (Perform eddy current testing) has already been selected.</p> <p>Where tests require the interpretation of drawings, Unit MEM09002B (Interpret technical drawings) should also be selected.</p> <p>Where power tools are required, Unit MEM18002B (Use power tools/hand held operations) should also be selected.</p>
<b>Band</b>	A

<b>Unit weight</b>	2
<b>Notes</b>	There are no notes for this unit.
<b>Elements</b>	<b>Performance criteria</b>
Elements are the essential outcomes of the unit of competency.	Together, performance criteria specify the requirements for competent performance. Text in <i>italics</i> is explained in the range statement following.
1 Prepare inspection areas for basic eddy current testing	<p>1.1 Inspection areas are cleaned and prepared for testing using appropriate procedures and materials.</p> <p>1.2 <i>Preparation processes</i> are carried out in accordance with the relevant procedures and OH&amp;S requirements.</p> <p>1.3 Inspection areas are visually assessed and obvious discontinuities are identified.</p>
2 Perform basic eddy current testing	<p>2.1. Nominated test is identified from standard operating procedures.</p> <p>2.2 Test equipment is prepared in accordance with standards and/or procedures.</p> <p>2.3 Eddy current test procedure is carried out in accordance with relevant work instructions and OH&amp;S requirements.</p> <p>2.4 Eddy current test equipment is maintained and stored in accordance with standard operating procedures and OH&amp;S requirements.</p>
3 Report the results of basic eddy current test(s)	<p>3.1 Basic indications are checked and defects are identified in accordance with enterprise standards and/or procedures.</p> <p>3.2 Basic indications are confirmed in accordance with enterprise standards and/or procedures.</p> <p>3.3 Test results are reported in accordance with enterprise standards and/or procedures.</p>

### Range statement

The range statement provides information about the context in which the unit of competency is carried out. The variables and scope 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.

The following variables may be present and may include, but are not limited to, the examples listed under the scope. All work is undertaken to relevant legislative requirements, where applicable.

Variable	Scope
<i>Preparation processes</i>	Surface cleaning and drying

## 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** A person who demonstrates competency in this unit must be able to perform basic eddy current testing. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

**Context of assessment** 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.

**Interdependent assessment** This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with operating eddy current testing equipment and applying basic testing procedures in a specific range of industrial applications, or other units requiring the exercise of the skills and knowledge covered by this unit.

**Method of assessment** 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.

**Consistency of performance** 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.

**Required skills** Look for evidence that confirms skills in:

- interpreting and following procedures
- identifying inspection areas
- identifying discontinuities and defects
- selecting appropriate testing techniques, equipment and procedures

- documenting and reporting
- assessing risk
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures. May include drawings
- performing calculations using formulae

**Required knowledge**

Look for evidence that confirms knowledge of:

- cleaning and preparation processes:
- procedures and OH&S requirements in relation to the preparation process
- visual inspection
- eddy current instrument set-up:
- probe selection
- established assessment procedures and techniques
- types of discontinuities and their consequences
- procedure for carrying out basic eddy current testing
- system verification checks necessary to carry out basic eddy current testing:
- testing and compliance standards (enterprise specific)
- standard recording and reporting formats
- standard defects and comparative techniques
- basic principles of electricity, magnetism, electromagnetism and eddy current testing:
- basic electrical principles:
- test principles:
- overview of factors affecting eddy current response:
- basic metallurgy:
- limitations of eddy current testing
- hazards and safety precautions associated with eddy current testing
- basic maintenance and storage procedures for testing equipment
- common basic defects (these are industry-specific and relevant workplace defects should be chosen):
- methods/procedures for reporting test results
- use and application of personal protective equipment