



**Australian Government**

# **UEEEL0032 Conduct electrical tests on HV electrical machines**

**Release: 2**

# UEEEL0032 Conduct electrical tests on HV electrical machines

## Modification History

Release 2. Minor Change. Typographic error in prerequisites corrected.

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

## Application

This unit involves the skills and knowledge required to conduct electrical tests on high voltage (HV) electrical machines.

It includes preparing and conducting electrical inspections and tests on a three phase induction machine and completing workplace documentation.

The skills and knowledge described in this unit require a licence or permit to practice in the workplace where work is carried out on electrical installations which are designed to operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Competency development activities in this unit are subject to regulations directly related to licensing. Where a licence or permit to practice is not held, a relevant contract of training, such as an Australian Apprenticeship, may be required.

Additional and/or other conditions may apply in some jurisdictions subject to regulations related to electrical work. Practice in the workplace and during training is also subject to work health and safety (WHS)/occupational health and safety (OHS) regulations.

## Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0019 Fabricate, assemble and dismantle utilities industry components

UEECD0020 Fix and secure electrotechnology equipment

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0023 Terminate cables, cords and accessories for low voltage circuits

UEEEL0033 Conduct electrical tests on LV electrical machines

UEEEL0019 Solve problems in direct current (d.c.) machines

UEEEL0021 Solve problems in electromagnetic devices

UEEEL0024 Test and connect alternating current (a.c.) rotating machines

UEEEL0025 Test and connect transformers

and

UEECD0043 Solve problems in direct current circuits

or

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

and

UEEEL0074 Wind electrical coils

UEEEL0056 Place and connect electrical coils

UEEEL0068 Rewind three phase low voltage induction machines

or

UEEEL0003 Arrange circuits, control and protection for general electrical installations

UEEEL0014 Isolate, test and troubleshoot low voltage electrical circuits

UEEEL0008 Evaluate and modify low voltage heating equipment and controls

UEEEL0009 Evaluate and modify low voltage lighting circuits, equipment, and controls

UEEEL0010 Evaluate and modify low voltage socket outlets circuits

## Competency Field

Electrical

## Unit Sector

Electrotechnology

## Elements and Performance Criteria

### ELEMENTS

Elements describe the essential outcomes.

#### **1 Prepare to conduct electrical tests on a three phase induction machine**

### PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1** WHS/OHS requirements and workplace procedures for a given work area are identified, obtained and applied
- 1.2** WHS/OHS risk control measures and workplace procedures for work preparation are followed
- 1.3** Scope of work is determined from job sheets,

|          |                                                                    |                                                                                                                                                                                     |
|----------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                                                    | specifications and regulatory requirements                                                                                                                                          |
|          | <b>1.4</b>                                                         | Advice is sought from work supervisor to ensure work activity is coordinated effectively with others                                                                                |
|          | <b>1.5</b>                                                         | Materials required for work are obtained in accordance with workplace procedures                                                                                                    |
|          | <b>1.6</b>                                                         | Tools, equipment and testing devices required for work are obtained and checked for operation and safety                                                                            |
| <b>2</b> | <b>Conduct electrical tests on a three phase induction machine</b> |                                                                                                                                                                                     |
|          | <b>2.1</b>                                                         | WHS/OHS risk control work measures and workplace procedures are followed                                                                                                            |
|          | <b>2.2</b>                                                         | Machines/equipment are isolated in accordance with WHS/OHS requirements and workplace procedures                                                                                    |
|          | <b>2.3</b>                                                         | HV electrical inspection and tests are conducted to determine cause of faults and/or operational condition of the machine                                                           |
|          | <b>2.4</b>                                                         | Status of the machine is determined from inspection and test results and recorded in accordance with workplace procedures                                                           |
|          | <b>2.5</b>                                                         | Problem-solving techniques are used to resolve unplanned events                                                                                                                     |
|          | <b>2.6</b>                                                         | Quality of work checks are conducted to ensure coils are correctly wound with correct wire, number of turns and shape in accordance with workplace procedures and work instructions |
|          | <b>2.7</b>                                                         | Work is completed in accordance with given timeframe, environment and workplace procedures                                                                                          |
| <b>3</b> | <b>Complete work report</b>                                        |                                                                                                                                                                                     |
|          | <b>3.1</b>                                                         | WHS/OHS work completion risk control measures and workplace procedures are followed                                                                                                 |
|          | <b>3.2</b>                                                         | Status of HV electrical machine is documented in accordance with workplace procedures and relevant person/s notified                                                                |

## Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Conducting electrical inspection and tests must include at least the following:

- two different HV electrical machines with one machine containing two winding faults

Purpose of tests must include at least the following:

- causes of faults
- the machine has been correctly repaired and complies with all requirements

## Unit Mapping Information

This unit replaces and is equivalent to UEENEEG158A Conduct electrical tests on HV electrical machines.

## Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

# Assessment Requirements for UEEEL0032 Conduct electrical tests on HV electrical machines

## Modification History

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## Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least one occasion and include:

- dismantling machine and storing parts securely
- setting up tests correctly
- taking test readings accurately
- determining the status of the machine correctly from test results
- documenting the status of the machine clearly
- dealing with unplanned events
- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including using risk control measures
- conducting inspection and electrical tests on three phase induction machines, including:
  - following winding specifications
  - preparing stator for winding
  - selecting correct coils
- following quality procedures, workplace procedures and instructions
- using tools, equipment and testing devices.

## Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- high voltage (HV) motor testing devices and techniques, including:
  - test/measuring devices and their application
  - connection of test/measuring devices into a circuit encompassing:
    - safety procedures
    - circuit arrangement of test/measuring devices
  - taking and interpreting readings

- storage, maintenance and care of test/measuring devices
- problem-solving techniques
- relevant industry standards
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications and operating instructions for tools and equipment
- relevant quality workplace procedures
- relevant testing methods
- relevant tools, equipment and materials
- relevant WHS/OHS legislated requirements
- relevant winding data
- relevant workplace documentation
- relevant workplace policies, procedures and instructions.

## Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated suitable workplace operational situations that replicate workplace conditions.

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.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, equipment specifications, regulations, relevant industry standards, codes of practice and operation manuals.

## Links

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