



Australian Government

UEERL0005 Locate and rectify faults in low voltage (LV) electrical equipment using set procedures

Release: 1

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Modification History

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 locate and rectify faults in low voltage (LV) electrical equipment.

It includes following workplace procedures to inspect and test electrical equipment, identify and rectify faults and complete reporting. This must be incidental to a primary or regular function of the workplace. The Range of Conditions describes exclusions for this unit of competency.

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.).

The skills and knowledge described in this unit may require a license to practice in the workplace where plant and equipment operate at voltage above 50 V a.c. or 120 V d.c. However 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 regulations directly related to occupational health and safety and where applicable contracts of training such as apprenticeships.

Additional and/or other conditions may also apply under State and Territory legislation and regulations related to licencing, electrical work and work health and safety (WHS)/occupational health and safety (OHS) regulations, which must be confirmed prior to commencing this unit.

In some jurisdictions additional information related to licencing may be required on certification documentation. Further guidance can be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Pre-requisite Unit

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

UEERL0004 Disconnect - reconnect electrical equipment connected to low voltage (LV) installation wiring

Competency Field

Restricted Licensing

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

PERFORMANCE CRITERIA

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

1 Prepare to identify faults

- 1.1 Work is planned to ensure WHS/OHS policies and workplace procedures are applied
- 1.2 Tools, electrical equipment and testing devices required for work are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.3 Relevant person/s is consulted to ensure the work is coordinated with others
- 1.4 Electrical characteristics of electrical equipment and electrical supply are determined and recorded in accordance with workplace procedures
- 1.5 Electrical equipment and associated circuits are identified for isolation purposes in accordance with workplace procedures

2 Locate faults in the electrical equipment

- 2.1 Electrical equipment and associated circuits are isolated in accordance with workplace procedures
- 2.2 WHS/OHS workplace policies and procedures are followed
- 2.3 Visual inspection and checks of the electrical equipment and components are carried out to detect any abnormality, damage or fault in accordance with workplace procedures
- 2.4 Wiring diagrams are checked and possible fault causes identified based on the wiring diagrams
- 2.5 Faults are confirmed and components to be replaced or adjusted are determined and details recorded in accordance with workplace procedures
- 2.6 Electrical equipment is dismantled and/or removed, as required, and components stored to protect them against

		loss or damage in accordance with workplace procedures
	2.7	Quality checks of work are undertaken in accordance with workplace procedures
3 Rectify faults	3.1	Materials and resources required to complete work are obtained in accordance with workplace procedures and job requirements
	3.2	Adjustments are made to electrical equipment for operation and parameters in accordance with manufacturers requirements, workplace procedures and relevant industry standards
	3.3	Faults are rectified in accordance with workplace procedures
	3.4	Approval for contingencies is obtained from appropriate person/s before implementation in accordance with workplace procedures
	3.5	Tests on the electrical equipment are performed in accordance with industry procedures to ensure safe return to service and operation of equipment
	3.6	Report/s, documentation and compliance certifications are completed in accordance with workplace, industry and regulatory requirements

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.

Locating and rectifying faults in LV electrical equipment must include at least one single phase and one multi-phase item of equipment of any of the following, and must be selected to align with the candidates' primary trade or

- air conditioning/refrigeration equipment
- instrumentation equipment
- electronic equipment
- electrical equipment
- neon signs

work function:

- composite equipment
- control devices
- water heaters
- motors
- gas appliances
- electrical work associated with fixed wiring, circuits at a switchboard or to general electrical equipment, including:
 - switches, socket outlets, circuit protective devices etc); or
 - installation of or alteration to any part of the fixed electrical wiring system (defined as electrical installation work)
- in hazardous areas or on electrical equipment that is part of an explosion-protection technique
- where high fault currents are possible
- which are luminaries

MUST NOT INCLUDE locating and rectifying faults in electrical equipment intended to operate from fixed wired supply up to 1,000 V a.c. or 1,500 V d.c. and not listed above. This includes:

Unit Mapping Information

No equivalent unit

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 UEERL0005 Locate and rectify faults in low voltage (LV) electrical equipment using set procedures

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 two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - selecting and using appropriate range of personal protective equipment (PPE)
 - hazard identification
 - using risk control measures
 - using safe working practices when carrying out electrical disconnect/reconnect work
 - working safely with low voltage (LV) electrical installations
- dealing with unplanned events
- using routine fault-finding techniques, workplace procedures and problem-solving techniques to locate and rectify faults in LV electrical equipment
- following safe work method statements (SWMS) and procedures
- using wiring diagrams to assist in identifying fault locations
- identifying, inspecting, testing and isolation of electrical equipment
- preparing to replace, implementing repairs and reconnecting electrical equipment
- applying safe procedures to discharge a capacitor
- returning to service and testing for polarity, continuity and insulation resistance
- using safe working practices when carrying out fault finding
- identifying common types of electrical faults (open circuit, short circuit, partial open circuit and partial short circuit)
- interpreting ratings from nameplates for comparison with any replacement
- visual checking techniques on a range of single and multi-phase equipment
- using test instrumentation, safely conduct procedures to identify faults in a range of single and multi-phase equipment
- rectifying all identified faults and ensuring appropriate consultation/approval before implementing contingencies
- checking repaired equipment for safe and correct operation
- producing reports and documents for the identification and rectification of faults in electrical

LV equipment in accordance with workplace procedures and regulatory and compliance documentation.

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:

- safe fault finding, including:
 - identification of common types of electrical faults (open circuit, short circuit, partial open circuit and partial short circuit) in single and multi-phase equipment
 - test equipment to locate common faults
 - techniques for using wiring diagrams to identify possible fault locations
- types of single and multi-phase equipment, including:
 - identifying basic principles of operation of typical equipment
 - visual inspection and checking techniques on a range of single/multi-phase equipment
 - interpretation of ratings from nameplates for comparison with any replacement
 - principles of operation of control equipment and protection devices associated with a range of single/multi-phase equipment
- problem-solving techniques, including:
 - symptoms of common faults
 - common faults that occur in single and multi-phase equipment and the indicators of such faults
 - techniques to ensure the electrical isolation and the maintenance of electrical isolation of single/multi-phase equipment when conducting fault finding
 - regulatory requirements/obligations regarding any live testing that may be unavoidable
 - fault-finding procedures
 - rectification of identified faults ensuring appropriate consultation/approval before implementing contingencies
- documentation and reporting- including:
 - reporting and recording systems
 - relevant workplace documentation, including quality, policies and procedures
 - status reports and documents related to locating and identifying isolation mechanisms for a wide range of circuits and associated loads
 - reports, documents and procedures related to safely locating and rectifying faults in electrical LV equipment
- relevant job safety assessments or risk mitigation processes include safe working methods statements
- relevant industry standards, including AS/NZS 4836 Safe working on or near low-voltage electrical installations and equipment
- relevant manufacturer specifications
- relevant WHS/OHS legislated requirements.

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, including where not permissible under regulatory and licencing requirements, assessment must occur in suitable simulated 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 other simulations
- relevant and appropriate materials, tools, facilities, equipment and PPE currently used in industry
- resources used should reflect current industry practices in relation to disconnecting and reconnecting electrical equipment connected to a LV supply
- applicable documentation, including workplace procedures, equipment specifications, regulations, Standards, codes of practice and operation manuals.

Links

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