



Australian Government

UEERS0024 Install and maintain rail track circuit leads and bonds

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.

This unit replaces and is equivalent to UEERS0011 Install and maintain rail track circuit leads and bonds.

Modifications this release include:

- Element titles and performance criteria amended.
- Minor amendments made to Performance Criteria text.
- Performance criteria 1.4, 2.2 and 3.3 added.
- Performance and Knowledge Evidence updated for clarity.

Application

This unit involves the skills and knowledge required to install/maintain track circuit leads and bonds of rail signalling electrical power and control systems.

It includes following workplace procedures, job planning, running and positioning, connecting track leads and bonds, maintaining and testing track leads and bonds, and completing required documentation.

Persons achieving competence in this unit will need to fulfil the applicable state/territory legislated rail safety requirements and to comply with relevant codes of practice, rules and/or guidelines.

No other licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

UEERS0021 Assemble and wire electrical rail signalling equipment

Competency Field

Rail Signalling

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare to install/maintain track circuit leads and bonds

PERFORMANCE CRITERIA

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

- 1.1** Work health and safety (WHS)/occupational health and safety (OHS) requirements and workplace procedures for work area are identified, obtained and applied
- 1.2** Hazards are identified, risks assessed, and control measures and workplace procedures implemented
- 1.3** Safety hazards that have not previously been identified are noted on job safety assessments and existing risk control measures implemented
- 1.4** Any rails or cables with traction return current are identified and protection measures planned
- 1.5** Missing or broken bonding cables are identified using track circuit bonding drawings
- 1.6** Appropriate person/s is consulted to ensure work is coordinated effectively with others involved on the worksite
- 1.7** Installation/maintenance instructions are reviewed to obtain clear and concise work requirements
- 1.8** Site bonding layout plan is reviewed to clarify bonding requirements
- 1.9** Material to install/maintain track circuit leads and bonds is obtained in accordance with workplace procedures and checked against job specifications
- 1.10** Tools, equipment and testing devices to install/maintain track circuit leads and bonds are obtained in accordance with workplace procedures and checked for correct operation and safety
- 1.11** Preparatory work is checked to ensure no unnecessary damage has occurred and complies with job specifications

2 Install/maintain track

- 2.1** WHS/OHS risk control measures and workplace

circuit leads and bonds

procedures for carrying out work are followed

- 2.2** On-track safe working requirements are identified and applied in accordance with workplace procedures and safety management system
- 2.3** Specified leads and bonds are run and positioned appropriately to the formation conditions and to minimise potential damage from track maintenance machines
- 2.4** Protection measures for traction return current are implemented prior to removing any cables, bonds or cutting rails
- 2.5** Installation/maintenance of track circuit leads and bonds are appropriately sequenced in accordance with job schedule
- 2.6** Positions of boxes and cable pits are checked to ensure compliance with specifications and appropriate follow-up action is initiated, as required
- 2.7** Components and rail surfaces are prepared to ensure secure and sound connections in accordance with job specifications
- 2.8** Leads or bonds are connected using specified fastening techniques ensuring technical compliance is achieved
- 2.9** Established methods for dealing with unplanned situations are discussed with appropriate person/s and documented in accordance with workplace procedures
- 2.10** Unplanned situations are dealt with safely in a manner that minimises risk to personnel and equipment and with the approval of an authorised person
- 2.11** Track circuit leads and bonds are installed and connected efficiently without waste of materials or damage to apparatus, the surrounding environment or services using sustainable energy practices
- 2.12** Bonds, leads and rail connections are inspected for damage or deterioration and appropriate corrective action is initiated in accordance with workplace

		procedures
	2.13	Appropriate tests are completed to identify components requiring repair or replacement in accordance with workplace procedures and job specifications
	2.14	Repair or replacement of components is carried out with due regard to train movements and safety of person/s involved
	2.15	Temporary bonding is installed, as required, and electrical readings on bonds/lead connections and insulated rail joints are taken to ensure compliance with specifications and site bonding layout plan
	2.16	Track-related equipment is inspected for faults or damage and all faults are documented and appropriate follow-up action is initiated in accordance with workplace procedures
3	Complete installation/maintenance of track circuit leads and bonds	
	3.1	WHS/OHS risk control, work completion measures and workplace procedures are followed
	3.2	All cables and bonds associated with traction return current are reinstated and no additional bonds or current paths that may impact on track circuit correct operation are present
	3.3	Worksite is cleaned and made safe in accordance with workplace procedures
	3.4	On-track safe working requirements are removed in accordance with workplace procedures and safety management system
	3.5	Work completion is documented, relevant reports produced and appropriate person/s notified in accordance with workplace procedures

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.

Unit Mapping Information

This unit replaces and is equivalent to UEERS0011 Install and maintain rail track circuit leads and bonds.

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 UEERS0024 Install and maintain rail track circuit leads and bonds

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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 and performance criteria on at least two separate occasions and include:

- applying relevant codes of practice, work health and safety (WHS)/occupational health and safety (OHS) requirements, industry regulation and environmental procedures
- preparing to install/maintain track circuit leads and bonds
- selecting and using tools correctly.
- performing plant hazard assessment on power tools used for rail fitting and cable termination
- interpreting relevant specifications, diagrams and track insulation plans correctly
- selecting correct cable and rail connection termination part, sizes and types
- installing/maintaining track circuit leads and bonds correctly
- applying bonding techniques correctly
- dealing with unplanned events in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- ensuring bonds and leads testing and test results comply with technical requirements
- completing installation/maintenance of track circuit leads and bonds
- completing relevant technical reports, records and documentation

Knowledge Evidence

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

- rail terminology, including signalling nomenclature, signalling symbols and terms relevant to each state or territory

- relationship to the signalling arrangement plan/scheme
- basic track circuit operation
- purpose and application of bonding plans
- track circuit connection methods and types
- track connections/track circuit leads
- bonding of turnouts (series /parallel)
- renewal of track leads and bonds
- traction bonding in electrified areas
- safe movement of rail vehicles and trains, including
 - role of the track circuit in rail signalling system in enabling safe and efficient movement of trains
 - relevant track circuit testing requirements
- typical issues/faults affecting rail electrotechnology services and systems
- scheduled and unscheduled infrastructure maintenance requirements
- track circuit leads and bonds installation and maintenance procedures
- methods for recording and maintaining work records and documentation
- relevant manufacturer specifications and manuals

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 other 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, codes of practice and operation manuals.

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