



Australian Government

Department of Education, Employment and Workplace Relations

TLIB3103A Install and maintain mechanical signalling locking and interlocking devices

Release: 1

TLIB3103A Install and maintain mechanical signalling locking and interlocking devices

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to maintain mechanical signalling locking and interlocking devices in accordance with safeworking and regulatory requirements and workplace procedures. It includes installing equipment and components, diagnosing and correcting faults in the devices, and testing and adjusting the repaired equipment to meet workplace and manufacturers standards. This unit excludes the initial assembly of the interlocking device. Licensing or certification requirements are not applicable to this unit.

Application of the Unit

Application of the Unit

Persons achieving competence in this unit will need to fulfil the applicable legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes and/or guidelines. Work is performed under minimal supervision, generally within a team environment. It involves the application of routine operational principles and procedures to the installation and maintenance of mechanical signalling locking and interlocking devices as part of workplace activities across a variety of operational contexts within the Australian rail system.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability Skills This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Assemble components	1.1 Correct components are identified and selected to comply with job specifications 1.2 Equipment and components are pre-assembled and positioned for installation in compliance with work orders and job specifications
2 Install equipment and components	2.1 Equipment/component layout is prepared and checked to ensure position matches the job specifications 2.2 All fastening positions are marked and drilled for installation 2.3 Equipment and components are secured in the correct sequence and position, and are installed in compliance with the job specifications 2.4 Additional requirements or alterations to existing components are identified and appropriate follow-up action is taken 2.5 Manufacturing of additional components is carried out to allow for complete installation 2.6 Alterations to existing components are carried out to provide for the installation of new equipment 2.7 All interlinking components are correctly attached and secured ready for testing in compliance with work specifications
3 Diagnose locking/interlocking equipment faults	3.1 Out-of-specification or non-operating mechanical locking and interlocking signalling equipment/components are correctly identified through operational testing 3.2 Viability of adjustments/replacements/repairs to equipment/components is correctly evaluated to ensure cost effective operations 3.3 Work is planned to ensure minimum disruption to train operations and safe repair activities 3.4 Support/assistance with diagnosis or repair operations is obtained through liaison with appropriate personnel
4 Correct equipment faults	4.1 Mechanical locking and interlocking signalling equipment and component cleaning/lubrication and adjustment is performed to specifications to ensure required level of operations 4.2 Equipment and components are replaced or repaired as per operational specifications to ensure required level of operations 4.3 Viability of repairs to replaced equipment/components is evaluated and equipment is tagged for repair or disposed of in line with workplace requirements 4.4 Liaison with or support to other personnel is maintained to ensure equipment is maintained within specification
5 Test and adjust locking/interlocking equipment	5.1 Test procedures are coordinated and liaison with appropriate personnel is maintained to ensure overall safety 5.2 All locking/interlocking equipment functions are tested to ensure operational compliance with required standards

ELEMENT

PERFORMANCE CRITERIA

- 5.3 Final cleaning, lubricating and adjustments to equipment are carried out to ensure operational compliance
- 5.4 Equipment is locked/secured as specified to ensure safety and protection from elements or persons
- 5.5 Records of maintenance/repair/commissioning activities are correctly completed and forwarded to appropriate personnel for use in identifying future maintenance requirements

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Relevant rail safety, OH&S and environmental procedures and regulations
- Workplace standards and procedures for the installation and maintenance of mechanical locking and interlocking signalling equipment
- Problems that may occur during the installation and maintenance of mechanical locking and interlocking signalling equipment and action that can be taken to report or resolve the problems
- Hazards that may exist when installing and maintaining mechanical locking and interlocking signalling equipment and ways of controlling the risks involved
- Contents of technical specifications and manuals
- Documentation/authorisation processes and procedures
- Track layout
- Material safety data sheets (MSDS)
- Mechanical fitting techniques
- Workshop facilities, personnel and manufacturing/repair capabilities
- Overview of other operations and personnel (i.e. non-mechanical)
- Material procurement procedures
- Principles of railway signalling, particularly those dealing with mechanical locking and interlocking equipment
- Use of chemicals, solvents and lubricants
- Fault finding techniques
- Adjustment and testing applications

Required skills:

Required skills:

- Communicate effectively with others when installing and maintaining mechanical locking and interlocking signalling equipment
- Read and interpret instructions, procedures, designs, technical diagrams, information and signs relevant to the installation and maintenance of mechanical locking and interlocking signalling equipment
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the installation and maintenance of mechanical locking and interlocking signalling equipment
- Work collaboratively with others when installing and maintaining mechanical locking and interlocking signalling equipment
- Promptly report and/or rectify any identified problems, faults or malfunctions that may occur when installing and maintaining mechanical locking and interlocking signalling equipment in accordance with regulatory requirements and workplace procedures
- Identify and/or Implement contingency plans for unexpected events when installing and maintaining mechanical locking and interlocking signalling equipment
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Monitor work activities in terms of planned schedule
- Modify activities depending on differing operational contingencies, risk situations and environments
- Work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- Operate and adapt to differences in equipment in accordance with standard operating procedures
- Select and use required personal protective equipment conforming to industry and OH&S standards
- Operate mechanical locking and interlocking signalling equipment
- Correctly use protective paints and lubricants including appropriate painting techniques
- Select and use hand, portable, power and air tools
- Apply relevant test procedures

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

EVIDENCE GUIDE

Critical aspects for assessment and evidence required to demonstrate competency in this unit

- The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying:
 - the underpinning knowledge and skills
 - relevant legislation and workplace procedures
 - other relevant aspects of the range statement
- Assessment must include exercises which demonstrate competent performance of the following in a range of situations:
 - correctly assembling components
 - installing equipment and components
 - diagnosing faults on locking and interlocking equipment
 - correcting equipment faults
 - correctly adjusting and testing locking and interlocking equipment
 - correctly interpreting designs

Context of and specific resources for assessment

- Performance is demonstrated consistently over a period of time and in a suitable range of contexts
- Resources for assessment include:
 - a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or
 - access to an appropriate range of relevant operational situations in the workplace
- In both real and simulated environments, access is required to:
 - relevant and appropriate materials and equipment, and
 - applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

Method of assessment

- Assessment of this unit must be undertaken by a registered training organisation
- As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests
- Practical assessment must occur:
 - through activities in an appropriately simulated environment, and/or
 - in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

- Operations may be conducted:
- in all weather conditions
- Locking and interlocking devices to be installed and maintained may include:
- all those in service in the Australian rail system
 - large or small operating lever frames
 - single or multiple lever ground frames
 - interlocking machine/s
 - operating and interlocking cams/locks
- Equipment may include:
- staff/token and Annett locks
 - bolt locks
 - switchlocks
 - emergency switch machine lock or emergency operating lock
 - electric lever locks
 - circuit controllers
 - ground frames
 - manual control floor or shelf mounted activation controls
 - facing point locks
 - levers and catch rods
 - electric point motors
 - lever locks
 - locking devices
 - warding/keying or index plates
- Installing and repairs may include:
- filing
 - grinding
 - cutting
 - bending
 - shaping
 - welding
 - drilling
 - bolting
 - clamping with ferrous and non-ferrous bar
 - rod
 - tube
 - chain

RANGE STATEMENT

- wire rope
- replacement of components including:
 - bushes
 - pivot pins
 - gears
 - wear plates
 - welding
 - joining

RANGE STATEMENT

- Adjustments may include:
- designed adjustment components
 - shimming
 - checking of clearances and tolerances
- Cleaning and lubrication includes:
- all cleaning operations by hand, chemical or steam cleaning
 - the application of protective paints or sealing agents
 - the application of lubricating oils and greases
- Operational compliance includes:
- manufacturers or workplace standards and specifications for functional movements, operations and outcomes
- Liaison may include:
- internal or external personnel from other work areas (e.g. train controllers, electricians)
- Tools and equipment may include:
- hand tools
 - portable power generators
 - air compressors
 - measuring rules
 - jigs
 - vices
 - cutting equipment
 - drills
 - spanners
 - files
 - bending devices
 - verniers
 - gauges
 - clamps
- Communication equipment may include:
- two-way radios
 - telephones/mobile phones
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:
- company procedures
 - enterprise procedures
 - organisational procedures
 - established procedures
- Safety and protective equipment may include:
- high visibility clothing
 - hearing protection
 - gloves
 - sunscreen
 - sunglasses
 - safety glasses
 - insect repellent
 - safety headwear

RANGE STATEMENT

Information/documents may include:	• safety footwear • portable radios • hand lamps • flags • safety devices • relevant log or record books • maintenance notices, records and requests • local instructions • manufacturers or workplace equipment operation manuals • operational instructions, policies and workplace standards and procedures • approved designs • emergency procedure manuals • two-way radio operation procedures • emergency procedures manual • conditions of service, legislation and industrial agreements including workplace agreements and awards
Applicable regulations and legislation may include:	• legislated rail safety requirements including acts and regulations from each applicable state and territory together with any nationally approved compliance codes and/or guidelines • relevant Australian Standards and related requirements • relevant state/territory OH&S legislation • relevant state/territory environmental protection legislation

Unit Sector(s)

Not Applicable

Competency Field

Competency Field	B - Equipment Checking and Maintenance
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