



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **TLIB3047A Repair and adjust mechanical signalling equipment and infrastructure**

**Release: 1**

## **TLIB3047A Repair and adjust mechanical signalling equipment and infrastructure**

### **Modification History**

Not Applicable

### **Unit Descriptor**

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This unit involves the skills and knowledge required to repair and adjust mechanical signalling equipment and infrastructure (excluding interlocking equipment) in accordance with safeworking and regulatory requirements and workplace procedures. It includes diagnosing equipment faults, correcting equipment faults, and testing and adjusting the equipment after repair. Licensing or certification requirements are not applicable to this unit.

### **Application of the Unit**

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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/or 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 repair and adjustment of mechanical signalling equipment and infrastructure (excluding interlocking equipment) 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.

## Elements and Performance Criteria

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
<b>1 Diagnose equipment faults</b>	<ol style="list-style-type: none"><li>1.1 Out-of-specification or non-operating equipment/components are correctly identified through operational testing</li><li>1.2 Viability of adjustments/replacements/repairs to equipment/components is correctly evaluated to ensure cost effective operations</li><li>1.3 Work is planned to ensure minimum disruption to train operations and safe repair activities</li><li>1.4 Support/assistance with diagnosis or repair operation is obtained through liaison with appropriate personnel</li><li>1.5 OH&amp;S and environmental requirements for a given task area are obtained and clarified in consultation with appropriate personnel</li></ol>
<b>2 Correct equipment faults</b>	<ol style="list-style-type: none"><li>2.1 Liaison with or support to other personnel is maintained to ensure equipment is maintained within specification</li><li>2.2 Equipment and components are replaced or repaired as per operational specifications to ensure required level of operations</li><li>2.3 Equipment and component adjustment is performed to specifications to ensure required level of operations</li><li>2.4 Viability of repairs to replaced equipment/components is evaluated and equipment is tagged for repair or disposed of as per organisational requirements</li></ol>
<b>3 Test and adjust equipment</b>	<ol style="list-style-type: none"><li>3.1 Final cleaning, lubricating and adjustments to equipment is carried out to ensure operational compliance</li><li>3.2 All equipment functions are tested to ensure operational compliance with required standards</li><li>3.3 Equipment is locked/secured as specified to ensure safety and protection from elements or persons</li><li>3.4 Records of repair activities are correctly completed and forwarded to appropriate personnel for use in identifying future maintenance requirements</li></ol>

## 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 safety, OH&S and environmental procedures and regulations
- Workplace standards and procedures for the repair and adjustment of mechanical signalling equipment and infrastructure (excluding interlocking equipment)

## REQUIRED KNOWLEDGE AND SKILLS

- Problems that may occur during the repair and adjustment of mechanical signalling equipment and infrastructure and action that can be taken to report or resolve the problems
- Hazards that may exist when repairing and adjusting mechanical signalling equipment and infrastructure and ways of controlling the risks involved
- Documentation/authorisation processes and procedures, technical specifications manuals
- Material safety data sheets for cleaning and lubricating equipment
- Mechanical fitting techniques
- Workshop facilities, personnel and manufacturing/repair capabilities
- Overview of other non-mechanical operations and personnel
- Material procurement procedures
- Fundamentals of signalling and operations of mechanical signalling equipment
- Use of chemicals, solvents and lubricants
- Fault detection techniques
- Recording procedures

### Required skills:

- Communicate effectively with others when repairing and adjusting mechanical signalling equipment and infrastructure
- Read and interpret instructions, procedures, information, diagrams and signs relevant to the repair and adjustment of mechanical signalling equipment and infrastructure
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to the repair and adjustment of mechanical signalling equipment and infrastructure
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when repairing and adjusting mechanical signalling equipment and infrastructure
- Promptly report and/or rectify any identified problems, faults or malfunctions when repairing and adjusting mechanical signalling equipment and infrastructure in accordance with regulatory requirements and workplace procedures.
- Implement contingency plans for unexpected events when repairing and adjusting mechanical signalling equipment and infrastructure
- 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
- Adapt to differences in equipment in accordance with standard operating procedures
- Safely use chemical cleaning agents, solvents and lubricants

**Required skills:**

- Select and use hand, portable, power and air tools
- Check compliance with operational specification
- Repair and replace equipment
- Apply relevant test procedures
- Operate mechanical signalling equipment
- Select and use required personal protective equipment conforming to industry and OH&S standards

**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.

**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 diagnosing faults
  - repairing identified equipment faults correctly
  - correctly adjusting and testing equipment following repair

**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:

**EVIDENCE GUIDE**

- relevant and appropriate materials and equipment, and
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals

## EVIDENCE GUIDE

### 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

Equipment may include:

- signals
- points equipment
- ground frames
- level crossing and tramway crossing mechanisms
- frames
- rods
- bars
- structures
- housings
- boxes
- signage

Repairs may include:

- filing
- grinding
- replacement of components including bushes, pivot pins, gears, wear plates, welding and joining

Adjustments may include:

- adjustments using designed adjustment components
- shimming
- the checking of clearances and tolerances

Cleaning and lubrication includes:

- all cleaning operations by hand
- chemical or steam cleaning
- the application of lubricating oils and greases



## RANGE STATEMENT

- Operational compliance includes:
- manufacturers and/or safeworking operational 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
  - gauges
- 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 standards and 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
  - safety footwear
  - portable radios
  - hand lamps
  - flags
  - safety devices
- Information/documents may include:
- relevant log or record book
  - maintenance notices, records and requests
  - local instructions
  - manufacturers or workplace equipment operation manuals
  - operational instructions, policies and workplace procedures
  - emergency procedure manuals
  - two-way radio operation procedures
  - emergency procedures manual
  - conditions of service, legislation and industrial agreements including workplace agreements and awards

**RANGE STATEMENT**

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