



Australian Government

Department of Education, Employment and Workplace Relations

TLIW3016A Weld rail using flashbutt welding process

Release: 1

TLIW3016A Weld rail using flashbutt welding process

Modification History

Not Applicable

Unit Descriptor

Unit Descriptor

This unit involves the skills and knowledge required to weld rail using the flashbutt welding process in accordance with safeworking and regulatory requirements and workplace procedures. It includes performing pre-operational and post-operational equipment checks, preparing rail for welding, carrying out the flashbutt welding in accordance with workplace requirements, checking weld conformance, and completing all required documentation. Licensing or certification requirements may be 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 state and territory together with any nationally approved compliance codes and/or guidelines.

Work is performed under some supervision, generally within a team environment. It involves the application of routine operational principles and procedures to weld rail using the flashbutt welding process as part of workplace activities across a variety of operational contexts within the Australian rail system.

Operators of mechanised equipment must have undertaken training and, where appropriate, hold the relevant licence, permit or certificate and be recognised as competent for the class of machinery being used.

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

ELEMENT	PERFORMANCE CRITERIA
1 Perform pre-operational equipment checks	1.1 Detailed pre-operational equipment checks are conducted as per manufacturers specifications and/or local maintenance schedules 1.2 Deficiencies with equipment are identified and rectified in accordance with workplace procedures 1.3 Relevant persons are notified of problems and documentation is completed
2 Prepare rail for welding	2.1 Weld location is checked to confirm suitability for welding in accordance with workplace standards 2.2 Track preparation for welding is arranged (if required) in accordance with workplace procedures and standards 2.3 Rail ends are prepared for welding in accordance with workplace procedures and standards
3 Carry out flashbutt welding	3.1 Flashbutt welding equipment is prepared for use 3.2 Flashbutt welding unit is clamped to rail ensuring accurate alignment 3.3 Equipment is operated in accordance with machine operation instructions and workplace procedures to achieve appropriate quality standard 3.4 Warning systems are monitored and responded to appropriately during operation to maintain correct functionality of equipment 3.5 Track restoration is arranged (where required) in accordance with workplace procedures and standards 3.6 Weld is profile-ground to ensure smooth running surface in accordance with workplace procedures and standards
4 Check weld conformance	4.1 Finished ground weld area is visually inspected for surface finish and defects 4.2 Finished ground weld area is checked for conformance to rail profile and geometry acceptance standards
5 Perform post-operational equipment checks	5.1 Post-operational equipment checks are conducted in accordance with manufacturers specifications or local maintenance schedules to identify defects and maintenance requirements 5.2 Deficiencies with equipment are identified and rectified in an appropriate manner to maintain correct functionality of equipment 5.3 Relevant persons are notified of problems and/or documentation is completed in accordance with instructions and the relevant codes of practice
6 Complete documentation	6.1 Required documentation and/or recording is completed in accordance with workplace procedures

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 procedures for the operation of flashbutt welding equipment
- Workplace procedures for the welding of rail using the flashbutt welding process
- Problems that may occur during use of the flashbutt welding process and equipment, and action that can be taken to report or resolve the problems
- Hazards that may exist during welding of rail using the flashbutt welding process, and ways of controlling the risks involved
- Basic technical knowledge relevant to flashbutt welding
- Rail welding standards
- Emergency procedures
- Characteristics of relevant plant and equipment, transport, structures, hardware and components used in work activities
- Materials identification, handling and storage
- Hazardous situations and related personal protection measures
- Relevant recording and documentation procedures

Required skills:

- Communicate effectively with others when welding rail using the flashbutt welding process
- Read and interpret instructions, procedures, route information and signs relevant to welding of rail using the flashbutt welding process and equipment
- Interpret and follow operational instructions and follow scheduled work process when welding rail using the flashbutt welding process
- Complete documentation related to work activities
- Operate communication equipment to required protocol
- Work collaboratively with others when welding rail using the flashbutt welding process
- Promptly report and/or rectify any identified problems, faults or malfunctions when welding rail using the flashbutt welding process in accordance with regulatory requirements and workplace procedures
- Plan the scheduled work including predicting consequences and identifying improvements
- Implement contingency plans for unexpected events when using the flashbutt welding process

Required skills:

and equipment

- 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 equipment
- Carry out required welding operations
- Select and use relevant hand and portable power tools
- Handle rail safely
- Check compliance between work and job specifications
- Implement required fire control procedures
- Select and use required personal protective equipment
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
- Operate flashbutt welding equipment (for which certificated and licensed)

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:
 - ensuring equipment is operating correctly
 - preparing equipment for operation
 - operating equipment correctly
 - checking finished welds for conformance
 - completing documentation/records correctly

EVIDENCE GUIDE

- Context of and specific resources for assessment**
- successfully performing a minimum of 25 welds
 - 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 at the registered training organisation, 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:
- by day or night
 - in all possible weather conditions
- Work may be conducted in:
- restricted spaces
 - exposed conditions
 - controlled or open environments
- Work may involve:
- exposure to chemicals, and dangerous or hazardous substances

RANGE STATEMENT

- Flashbutt welding equipment may include:
 - movements of equipment, goods and vehicles
 - rail mounted flashbutt welders
 - stationary flashbutt welders used in field
- Equipment may include:
 - rail tensor
 - welding records
 - rail shears
 - timekeeping records
 - rail profile grinder, angle grinder
 - incident reporting data
 - electric generator
 - track inspection reports
 - gas heating/cutting equipment
 - welding equipment
 - rail friction saw
 - hand tools
- Safety hazards may include:
 - fire risk
 - poor weather
 - rail tensor failure (broken pins etc.)
 - flash damage to eyes
 - burns
- Depending on the type of organisation concerned and the local terminology used, workplace procedures may include:
 - company procedures
 - enterprise procedures
 - organisational procedures
 - established procedures
- Communications equipment may include:
 - two-way radios
 - telephones/mobile phones
 - agreed audible or hand signal
- Depending on the work context, safety and personal protective equipment may include:
 - high visibility clothing
 - fire retardant overalls or long sleeved shirt and long pants
 - hearing protection
 - gauntlet type gloves
 - sunscreen
 - welding goggles
 - sunglasses
 - safety glasses
 - insect repellent
 - safety headwear
 - safety footwear
 - portable radios/mobile phones

RANGE STATEMENT

- Information/documents may include:
- hand lamps
 - flags
 - safety devices
 - operational instructions, policies and workplace procedures
 - local authority regulations and procedures
 - work orders
 - technical instructions
 - manufacturers or workplace equipment instructions and operation manuals
 - emergency procedure manuals
 - two-way radio/mobile phone operation procedures
 - QA plans, data and document control
 - conditions of service, legislation and industrial agreements including workplace agreements and awards
- Applicable procedures and codes 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, including AS 4292
 - relevant state/territory OH&S legislation
 - relevant state/territory environmental protection legislation
 - ADG Code and associated requirements
 - relevant fire regulations
- Liaison may include:
- internal or external personnel from other work areas (e.g. train controllers)
- Information may be provided:
- electronically
 - in writing, via forms/documents/plans
 - orally, via face-to-face communications

Unit Sector(s)

Not Applicable

Competency Field

Competency Field

W - Equipment and Systems Operations