



Australian Government

TLIW0036 Apply electric welding process to rail

Release: 1

TLIW0036 Apply electric welding process to rail

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

Application

This unit involves the skills and knowledge required to weld rails, crossings and switches using an electric welding process in accordance with rail industry standards, safeworking and regulatory requirements, and workplace procedures.

It includes using non-destructive testing to locate defects; preparing rails, crossings or switches for welding; gouging or grinding; setting up welding equipment; performing welding operations; checking weld conformance; and completing required documentation. These processes are used to repair rail surface defects and restore rail profile to plain rail, crossings and switches.

People achieving competence in this unit will need to fulfil applicable state/territory legislated rail safety requirements and to comply with rail industry standards, codes of practice and/or guidelines.

Work is performed under some supervision, generally in a team environment. It involves the application of routine operational principles and procedures when welding rail using an electric 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.

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

Pre-requisite Unit

Not applicable.

Competency Field

W – Equipment and Systems Operations

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Prepare rails, crossings or switches for welding

2 Use non-destructive testing

3 Assemble and set up welding equipment

4 Assemble and set up gouging and grinding equipment

5 Remove defects

PERFORMANCE CRITERIA

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

- 1.1 Weld repair area is identified and assessed in accordance with standards and procedures
- 1.2 Welding equipment and consumables are prepared and checked for serviceability
- 1.3 Hazards are identified, risks are assessed and control measures are implemented
- 1.4 Weld repair area is prepared for welding in accordance with workplace standards and procedures
- 1.5 Track components are assembled or aligned to specification as required
- 2.1 Appropriate non-destructive testing method is selected in accordance with workplace requirements
- 2.2 Non-destructive testing method is used to identify and locate defects in accordance with rail industry standards and organisational procedures
- 3.1 Welding equipment is set up and adjusted to meet welding process requirements
- 3.2 Accessories and consumables are selected for use
- 4.1 Gouging and grinding equipment is assembled and set up
- 4.2 Equipment settings are adjusted to meet process requirements
- 4.3 Accessories and consumables are selected for use
- 5.1 Appropriate method to be used to remove defect is identified in accordance with organisational standards and procedures
- 5.2 Defect is removed using identified method in accordance with organisational standards and procedures

- | | |
|---|---|
| 6 Perform welding operation | <ul style="list-style-type: none">6.1 Weld metal is applied to repair area to meet specifications in accordance with standards and procedures6.2 Welded area is cleaned in preparation for grinding6.3 Welded area is ground in accordance with organisational standards and procedures |
| 7 Check weld conformance | <ul style="list-style-type: none">7.1 Finished ground weld area is visually inspected for surface finish and defects7.2 Finished ground weld area is checked for conformance to rail, crossing or switch profile acceptance standards |
| 8 Complete post-operative checks and documentation | <ul style="list-style-type: none">8.1 Equipment is checked for serviceability8.2 Defective equipment is replaced and reported for servicing or repair in accordance with organisational policies and procedures8.3 Documentation on work undertaken is completed and processed in accordance with organisational 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 can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIW0036A Apply electric welding process to rail.

Links

Companion Volume implementation guides are found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>

Assessment Requirements for TLIW0036 Apply electric welding process to rail

Modification History

Release 1. This is the first release of this unit of competency in the TLI Transport and Logistics Training Package.

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 five** separate occasions and include:

- applying relevant workplace procedures
- ensuring weld conformance to organisational requirements
- identifying job hazards and taking required action to minimise, control or eliminate identified hazards
- implementing contingency plans
- interpreting and following operational instructions and prioritising work when welding rail using an electric welding process
- modify activities depending on operational contingencies, risk situations and environments
- monitoring work activities in terms of planned schedule
- operating and adapting to differences in equipment in accordance with operating procedures
- performing welding, grinding, gouging and testing operations on rails, crossings and switches in accordance with rail industry standards and/or workplace requirements
- preparing items for welding in accordance with workplace requirements
- reading and interpreting relevant technical data, drawings, instructions and manuals
- reporting and rectifying problems, faults and malfunctions within limits of own role, in accordance with organisational procedures
- selecting and using hand tools, power tools and equipment
- selecting and using required personal protective equipment
- using non-destructive (liquid penetrant or magnetic particle) testing equipment, gouging equipment and hand grinding equipment in accordance with safety data sheets (SDSs)/material safety data sheets (MSDSs), manufacturer instructions and workplace procedures
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

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:

- authorisation/approval processes and procedures
- documentation and record keeping requirements
- fundamentals of track and components
- hazards that may exist when welding rail using an electric welding process and ways of controlling the risks involved
- problems that may occur when welding rail using an electric welding process and action that can be taken to report or resolve these problems
- rail industry acceptance standards for weld repairs on rail
- relevant rail danger zones
- relevant safety, work health and safety (WHS)/occupational health and safety (OHS) and environmental procedures and regulations
- track industry standards for rail, crossing and switch condition and surface profile
- workplace procedures, safety data sheets (SDSs)/material safety data sheets (MSDSs) and manufacturer instructions for non-destructive (liquid penetrant or magnetic particle) testing of rail
- workplace procedures for removing defects by gouging, grinding and welding rail using an electric welding process.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment must occur in workplace operational situations or, where this is not available, in simulated workplace operational situations that replicate rail corridor 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 include:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, equipment and personal protective equipment currently used in industry
- applicable documentation including workplace procedures, regulations, rail industry standards, SDSs/MSDSs, codes of practice and operation manuals.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=df441c6e-213d-43e3-874c-0b3f7036d851>