



Australian Government

TLIW0044 Weld rail on tram/light rail systems using submerged ARC welding process

Release: 1

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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 rail on tram/light rail systems using a submerged arc welding process.

It covers preparing materials, selecting and setting up welding equipment, carrying out submerged arc welding, inspecting for and correcting defects, and maintaining weld records.

Welds would mainly involve building up or pad welding on longer lengths of rail on tram/light rail systems. It covers welding both the rail head and the check rail.

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 describe the essential outcomes.

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

- | | |
|------------------------------|--|
| 1 Prepare for welding | 1.1 Weld requirements are identified from specifications and/or technical drawings |
| | 1.2 Rail surface is correctly prepared using tools and techniques appropriate to the material and process |

- 1.3 Materials are assembled/aligned to specifications as required
- 1.4 Track is measured prior to commencement of welding
- 1.5 Welding machine settings and consumables are identified from job requirements, welding procedures, specifications and/or technical drawings
- 1.6 Hazards are identified, risks are assessed and control measures are implemented
- 2 Assemble and set up equipment**
 - 2.1 Welding equipment is assembled and set up safely and correctly in accordance with operating procedures
 - 2.2 Defective equipment is tagged and replaced in accordance with organisational and manufacturer specifications
- 3 Weld rail using submerged arc process**
 - 3.1 Pad, butt and fillet welds are deposited correctly in flat and fillet welds in horizontal position in accordance with specifications
 - 3.2 Joints are cleaned to specifications using techniques and tools appropriate to the defect, material and process
- 4 Inspect welds and correct faults**
 - 4.1 Weld joints are visually inspected against specifications
 - 4.2 Track is measured to ensure welded track is within accepted tolerances
 - 4.3 Weld defects are identified and remedial action is taken, where required
 - 4.4 Defects are removed with minimum loss of sound metal using techniques and tools appropriate to the defect, material and process
- 5 Maintain weld records**
 - 5.1 Weld records are filled in legibly and proofread
 - 5.2 Weld records are processed in accordance with organisational 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 can be found in the Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to TLIW0044A Weld rail on tram/light rail systems using submerged arc welding process.

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 TLIW0044 Weld rail on tram/light rail systems using submerged ARC welding process

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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 five** separate occasions and include:

- applying relevant legislation and workplace procedures
- assembling and setting up welding equipment and preparing consumables in accordance with safety data sheets (SDSs)/material safety data sheets (MSDSs), manufacturer instructions and workplace procedures
- ensuring weld conforms to organisational requirements
- identifying job hazards and taking required action to minimise, control or eliminate identified hazards
- interpreting and following operational instructions
- modifying activities depending on operational contingencies, risk situations and environments
- preparing items for welding in accordance with workplace requirements.

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
- hazards that may exist when welding rail using submerged welding process and ways of controlling the risks involved
- problems that may occur when welding rail using submerged welding process and action that can be taken to report or resolve these problems
- rail industry acceptance standards for weld repairs on tram/light rail track
- relevant rail danger zones
- relevant safety, work health and safety (WHS)/occupational health and safety (OHS) and environmental procedures and regulations
- SDSs/MSDSs and manufacturer instructions

- workplace procedures for welding rail on tram/light rail systems using submerged arc welding process
- track industry standards for rail condition and surface profile.

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.

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Assessment must occur in workplace operational situations or, where this is not available, in simulated workplace operational situations that replicate tram/light rail 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

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