



Australian Government

MARB4001A Carry out basic welding, brazing, cutting and machining operations on a coastal vessel

Release 1

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Modification History

Release 1

This is the first release of this unit.

This unit replaces and is equivalent to TDMMR6207A Carry out basic welding, brazing, cutting and machining operations on a coastal vessel.

Unit Descriptor

This unit involves the skills and knowledge required to carry out basic welding, brazing, cutting and machining tasks.

Application of the Unit

This unit applies to engine workers in the maritime industry working as a Marine Engine Driver Grade 1 on vessels up to 1500 kW.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

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

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| 1 Carry out basic welding tasks | <ul style="list-style-type: none">1.1 Requirements for welding tasks are correctly interpreted from work instructions1.2 Parts are prepared for welding according to established practice1.3 Parts are welded according to established practice and work requirements1.4 Weld defects are identified and appropriate action is taken according to established practice and standard operating procedures1.5 Flame gouging methods are used to remove plate and weld material according to established practice and standard operating procedures1.6 Finished work is checked against work instructions for accuracy and quality |
| 2 Carry out basic brazing tasks | <ul style="list-style-type: none">2.1 Requirements for brazing tasks are correctly interpreted from work instructions2.2 Parts are prepared for brazing according to established practice and work requirements2.3 Brazing equipment is prepared for brazing operations according to established procedures2.4 Parts are brazed using established procedures2.5 Finished work is checked against work instructions for accuracy and quality |
| 3 Carry out basic cutting tasks | <ul style="list-style-type: none">3.1 Instructions are reviewed, and required size and shape of cut work is correctly identified and interpreted3.2 Work is correctly marked out in preparation for cutting according to established practice and standard operating procedures3.3 Thermal cutting plant and equipment is set up according to established procedures3.4 Steel plate and/or rolled sections are cut to shape and size according to established practice and standard operating procedures3.5 Finished work is checked against work instructions for accuracy and quality according to standard operating procedures |

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| 4 Carry out basic machining tasks | <ul style="list-style-type: none">4.1 Requirements for basic machining tasks are correctly interpreted from work instructions according to standard operating procedures4.2 Work is correctly marked out in preparation for basic machining according to established practice and standard operating procedures4.3 Machine is set up according to established procedures4.4 Machining is carried out according to established procedures4.5 Finished work is checked against work instructions for accuracy and quality according to standard operating procedures |
| 5 Follow safety and hazard control procedures | <ul style="list-style-type: none">4.1 Required safety precautions and regulations are followed when carrying out basic welding4.2 Operational hazards are identified and action is taken to eliminate, or where elimination is not possible to minimise, risk to personnel |

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required Skills:

- Clean, sharpen or adjust tools according to standard operating procedures
- Dress and true a grinding wheel
- Follow required work schedule according to company requirements
- Identify a glazed, loaded or untrue grinding wheel condition and take appropriate action
- Mark out work to specifications, and measure and check the quality of finished work
- Perform basic calculations required to carry out basic welding, brazing, cutting and machining operations
- Read and interpret work specifications and drawings
- Read, interpret and apply instructions and standard operating procedures relevant to basic welding, brazing, cutting and machining operations required on a coastal vessel
- Recognise routine problems that may occur when performing basic welding, brazing, cutting and machining operations on a vessel and take appropriate action
- Select and safely use welding, brazing, cutting and machining tools and equipment according to operating procedures
- Store welding, brazing, cutting and machining tools and equipment after use according to standard procedures
- Use effective verbal and other communication skills required when carrying out basic welding, brazing, cutting and machining operations on a vessel
- Work safely and collaboratively with others when carrying out basic welding, brazing, cutting and machining operations on a vessel

Required Knowledge:

- Applicable sections of relevant maritime regulations
- Applicable legislation, regulations and codes of practice:
 - National Standard for Commercial Vessels (NSCV) and USL Code
 - relevant Australian engineering standards
 - relevant state and territory marine regulations
 - relevant work health and safety (WHS)/occupational health and safety (OHS) and pollution control legislation and policies
- Basic operations within area of own responsibility:
 - basic fillet welds
 - basic butt welds
 - basic pad welds
 - manual metal arc welding
 - oxygen acetylene welding

- basic machining operation
- Characteristics and identifying features of common engineering drill bits
- Documentation and records:
 - maintenance records
 - manufacturer instructions for tools and equipment
 - relevant safety data sheets (SDS)/material safety data sheets (MSDS)
 - safety management system plans, procedures, checklists and instructions
 - work instructions
 - vessel and company procedures
- Environmental protection measures when carrying out basic engineering tasks
- Hazards and related safety precautions when carrying out basic welding, brazing, cutting and machining tasks
- Procedures for:
 - identifying a glazed, loaded or untrue grinding wheel condition
 - dressing and/or truing a grinding wheel
- Safety management system and procedures
- Standard operating procedures for basic welding, brazing, cutting and machining tasks required of a Marine Engine Driver Grade 1
- Standard procedures for marking out work to specifications and measuring and checking the quality of finished work, including the correct use of:
 - adjustable gauge
 - callipers
 - centre punch hammers
 - dividers
 - rules and tapes
 - scribes
 - squares
 - trammels
 - vernier callipers and micrometer
- Techniques for identifying defective welds within limits of responsibility
- Types, names and identifying features of drilling machines used on coastal maritime vessels
- Typical work specifications and drawings used on a coastal vessel

Evidence Guide

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

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

The evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the Elements, Performance Criteria, Required Skills, Required Knowledge and include:

- implementing required safety, environmental and hazard control precautions and procedures
- taking action promptly to report operational incidents and problems according to regulations and shipboard procedures
- completing work systematically with required attention to detail
- carrying out basic welding, brazing, cutting and machining tasks while underway, in port and moored or at anchor.

Context of and specific resources for assessment

Performance is demonstrated consistently over time and in a suitable range of contexts.

Resources for assessment include access to:

- industry-approved marine operations site where carrying out basic welding, brazing, cutting and machining operations on a coastal vessel can be conducted
- tools, equipment and personal protective equipment currently used in industry
- relevant regulatory and equipment documentation that impacts on work activities
- range of relevant exercises, case studies and/or other simulated practical and knowledge assessments
- 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
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals.

Method of assessment

Practical assessment must occur in an:

- appropriately simulated workplace environment and/or
- appropriate range of situations in the workplace.

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are

appropriate to this unit:

- direct observation of the candidate carrying out basic welding, brazing, cutting and machining operations on a coastal vessel
- direct observation of the candidate applying relevant WHS/OHS requirements and work practices.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

In all cases where practical assessment is used it should be combined with targeted questioning to assess Required Knowledge.

Assessment processes and techniques must be appropriate to the language and literacy requirements of the work being performed and the capacity of the candidate.

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. Bold italicised wording, if used in the performance criteria, is detailed below.

Operational hazards may include:

- Moving and rotating machinery
- Moving heavy loads using unsafe procedures
- Non-compliance with safe working procedures
- Poor housekeeping procedures
- Power tools
- Sharp tools and implements
- Unsecured machinery, components or equipment
- Using equipment beyond safe working limits
- Using welding equipment near explosive/flammable liquids and gases

Unit Sector(s)

Not applicable.

Competency Field

Equipment Checking and Maintenance