



Australian Government

Department of Education, Employment and Workplace Relations

TDMMR4607B ASSIST IN BASIC WELDING, BRAZING, CUTTING AND MACHINING OPERATIONS ON A VESSEL

Release: 1

TDMMR4607B ASSIST IN BASIC WELDING, BRAZING, CUTTING AND MACHINING OPERATIONS ON A VESSEL

Modification History

Not applicable.

Unit Descriptor

UNIT DESCRIPTOR:

This unit involves the skills and knowledge required to carry out basic welding, brazing, cutting and machining tasks under the supervision of an engineer, as may be required of an Integrated Rating on board a vessel.

Application of the Unit

Application of the unit	The unit has application in the qualification for an Integrated Rating, i.e. Certificate III in Transport&Distribution(Maritime Operations - Integrated Rating).
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Licensing/Regulatory Information

Licensing/legislative requirements	The unit is consistent with the relevant sections of STCW 95 and Marine Orders under the Australian Navigation Act 1912, describing the specific requirements for Integrated Ratings.
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Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

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 Assist in basic welding tasks	. a Requirements for welding tasks are correctly interpreted from work instructions b Parts are prepared for welding as directed by engineer in accordance with established practice c Parts are welded as directed by the engineer d Weld defects are identified and appropriate action taken in conjunction with supervising engineer e Flame gouging methods are used to remove plate and weld material as directed by the supervising engineer f Finished work is checked work against work instructions for accuracy and quality
2 Assist in basic brazing tasks	a Requirements for brazing tasks are correctly interpreted from work instructions b Parts are prepared for brazing as directed by engineer in accordance with established practice c Brazing equipment is prepared for brazing operations in accordance with established procedures d Parts are brazed as directed by the engineer using established procedures

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ELEMENT	PERFORMANCE CRITERIA
2 Assist in basic brazing tasks (continued)	e Finished work is checked work against work instructions for accuracy and quality
3 Assist in basic cutting tasks	a Instructions are understood and required size and shape of cut work correctly identified and interpreted b Work is correctly marked out in preparation for cutting as directed by the engineer c Thermal cutting plant and equipment is set up in accordance with established procedures d Steel plate and/or rolled sections are cut to shape and size as directed by the engineer in accordance with established procedures e Finished work is checked against work instructions for accuracy and quality in accordance with standard operating procedures
4 Assist in basic machining tasks	a Requirements for basic machining tasks are correctly interpreted from work instructions in association with the supervising engineer and in accordance with standard operating procedures b Work is correctly marked out in preparation for basic machining as directed by the engineer c Machine is set up in accordance with established procedures d Machining is carried out under the supervision of the engineer in accordance with established procedures e Finished work is checked against work instructions for accuracy and quality in accordance with standard operating

ELEMENT	PERFORMANCE CRITERIA
	procedures
5 Follow safety and hazard control procedures	- a All required safety precautions and regulations are followed when assisting in basic welding, brazing, cutting and machining tasks - b Operational hazards are identified and action is taken in conjunction with the supervising engineer to minimise or eliminate risk to personnel, vessel and the environment

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Required Skills and Knowledge

REQUIRED KNOWLEDGE

This describes the knowledge required for this unit.

- 1 Applicable sections of relevant maritime regulations
- 2 Relevant OH&S and pollution control legislation and policies
- 3 Standard operating procedures for the basic welding, brazing, cutting and machining tasks as may be required of an integrated rating
- 4 Hazards and related safety precautions when carrying out basic welding, brazing, cutting and machining tasks
- 5 Techniques for identifying defective welds (within limits of responsibility of an integrated rating)
- 6 Typical work specifications and drawings used on a vessel
- 7 Standard procedures for marking out work to specifications and measuring and checking the quality of finished work, including the correct use of:
 - a rules and tapes
 - b squares

REQUIRED KNOWLEDGE

- c scribes
- d dividers
- e trammels
- f adjustable gauge
- g centre punch hammers
- h callipers
- i vernier callipers and micrometer

REQUIRED KNOWLEDGE

- 8 Procedures for identifying a glazed, loaded or untrue grinding wheel condition
- 9 Procedures for dressing and/or truing a grinding wheel
- 10 Types, names and identifying features of drilling machines used on maritime vessels
- 11 Characteristics and identifying features of common engineering drill bits
- 12 Environmental protection measures when carrying out basic engineering tasks

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REQUIRED SKILLS

This describes the basic skills required for this unit.

- 1 Use basic verbal and other communication skills required when assisting in basic welding, brazing, cutting and machining operations on a vessel
- 2 Read, interpret and apply basic instructions and standard operating procedures relevant to basic welding, brazing, cutting and machining operations on a vessel
- 3 Read and interpret work specifications and drawings
- 4 Work safely and collaboratively with others when assisting in basic welding, brazing, cutting and machining operations on a vessel
- 5 Select and safely use welding, brazing, cutting and machining tools and equipment as per operating procedures
- 6 Carry out basic calculations required when assisting in basic welding, brazing, cutting and machining operations
- 7 Store welding, brazing, cutting and machining tools and equipment after use as per standard procedures
- 8 Recognise routine problems that may occur when assisting in basic welding, brazing, cutting and machining operations on a vessel and take appropriate action
- 9 Clean, sharpen or adjust tools as per standard operating procedures
- 10 Adapt to differences in vessels, equipment and standard operating procedures

REQUIRED SKILLS

- 11 Follow required work schedule as per company requirements
- 12 Mark out work to specifications and measure and check the quality of finished work
- 13 Identify a glazed, loaded or untrue grinding wheel condition and take appropriate action
- 14 Dress and true a grinding wheel

Evidence Guide

Evidence Guide

TDMMR4607B ASSIST IN BASIC WELDING, BRAZING, CUTTING AND MACHINING OPERATIONS ON A VESSEL

The Evidence Guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

1 Critical aspects of evidence required to demonstrate competency in this unit	Assessment must confirm appropriate knowledge and skills to: - a Carry out basic welding, brazing, cutting and machining tasks - b Ensure the exercise of all required safety, environmental and hazard control precautions and procedures during basic welding, brazing, cutting and machining tasks - c Communicate effectively with supervising engineer during the completion of basic welding, brazing, cutting and machining tasks
2 Evidence required for demonstration of consistent performance	- a Performance is demonstrated consistently over a period of time and in a suitable range of contexts - b Consistently applies underpinning knowledge and skills when: 1 carrying out basic welding, brazing, cutting and

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| <p>c</p> | <p>machining tasks</p> <p>2 exercising all required safety, environmental and hazard control precautions and procedures during basic welding, brazing, cutting and machining tasks basic welding, brazing, cutting and machining tasks shipboard tasks</p> |
| <p>d</p> | <p>Shows evidence of application of relevant workplace procedures, including:</p> <p>1 ISM Code and associated vessel's safety management system and procedures</p> <p>2 OH&S regulations and hazard prevention policies and procedures</p> <p>3 standard operating procedures and work instructions</p> <p>4 following housekeeping processes</p> |
| <p>e</p> | <p>Action is taken promptly to report operational incidents and problems in accordance with regulations and shipboard procedures</p> |
| <p>f</p> | <p>Work is completed systematically with required attention to detail</p> |
| <p></p> | <p>Recognises and adapts appropriately to cultural differences in the workplace, including modes of behaviour and interactions between crew and others</p> |

Evidence Guide (continued)

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3 Context of assessment

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| <p>a</p> | <p>Assessment of competency must comply with the assessment requirements of the relevant maritime regulations</p> |
| <p>b</p> | <p>Assessment of this unit must be undertaken within relevant marine authority approved and audited arrangements by a registered training organisation:</p> <p>1 As a minimum, assessment of knowledge must be conducted through appropriate written/oral examinations, and</p> <p>2 Appropriate practical assessment must occur:</p> |

	- i at the registered training organisation; and/or - ii on an appropriate working or training vessel
4 Specific resources required for assessment	Access is required to opportunities to: - a demonstrate the ability to carry out basic welding, brazing, cutting and machining tasks on board a vessel through appropriate practical exercises and simulated situations; and/or - b carry out basic welding, brazing, cutting and machining tasks on an operational commercial or training vessel

Range Statement

Range Statement

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The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

VARIABLE	SCOPE
1. GENERAL CONTEXT	
a. Work must be carried out:	1 in compliance with relevant maritime regulatory requirements
b. Work is performed:	1 under the direction and supervision of a supervising engineer, with some accountability and responsibility for self in achieving the prescribed outcomes

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

c. Work involves:	1 the application of basic welding, brazing, cutting and machining procedures and techniques across a defined range of shipboard tasks falling within the limits of responsibility of an integrated rating
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d. Work requires:	1 the following of orders and instructions of the supervising engineer
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2. WORKSITE ENVIRONMENT

a Vessel may include:	1 any Australian or international commercial vessel
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b Assistance in basic welding, brazing, cutting and machining tasks may be carried out:	1 while underway 2 while in port 3 while moored or at anchor 4 when in dry dock
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c Basic operations within the responsibility of an integrated rating may include:	1 basic fillet welds 2 basic butt welds 3 basic pad welds 4 manual metal arc welding 5 oxygen acetylene welding 6 basic machining operation within the responsibility of an integrated rating
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Range Statement (continued)

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VARIABLE	SCOPE
d Operational hazards when assisting in welding, brazing, cutting and machining tasks may include:	1 sharp tools and implements 2 power tools 3 moving and rotating machinery 4 moving heavy loads using unsafe lifting procedures 5 unsecured machinery, components or equipment 6 use of welding equipment near explosive/flammable liquids and gases 7 using equipment beyond safe working limits 8 poor housekeeping procedures 9 non-compliance with safe working procedures
e Documentation and records may include	1 ISM Code safety management system plans, procedures, checklists and instructions 2 orders and instructions of the supervising engineer 3 instructions of manufacturers of tools and equipment 4 vessel and company procedures
f Applicable legislation, regulations and codes may include:	1 ISM Code 2 relevant international, Commonwealth, State and Territory OH&S legislation

Unit Sector(s)

Not applicable.

Field

Field MF Carry Out Operations on Equipment and Systems

Relationship to other units

Relationship to other units	The unit must be assessed in conjunction with other units that relate to the functions of the occupation(s) concerned.
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