



Australian Government

Department of Education, Employment and Workplace Relations

MEM25011B Install marine systems

Release: 1

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Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the installing and testing engine/plant and ancillary equipment relevant to propulsion, stability, steering and fuel systems for mechanically powered marine vessels. Straightforward installation only is covered by Unit MEM25015A (Assemble and install equipment and accessories/ancillaries).
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Application of the Unit

Application of the unit	This unit applies to practices for the installation and testing of engine/plant and ancillary equipment relevant to propulsion, stability, steering and fuel systems for mechanically powered marine vessels. Application may apply to drive systems such as inboard/outboard, water jet and side thrusting units (excluding outboard motor installation). Site locations may include new or existing external and internal locations for foundations, footings, beds and frameworks etc. completed prior to installation and commissioning. All specifications are applied using engineering drawings, written and verbal instructions. Straightforward modifications are of a minor nature not requiring specification changes or technical recording. Testing should be undertaken in accordance with manufacturer specifications, guidelines, requirements and limitations. Testing procedures may include engineering practices for determining correct operational function of mechanical, fluid power systems, equipment, components and associated items. Tasks may be undertaken in a workshop/site, moored or in a sea-trial situation. Work may be undertaken autonomously or as part of a team. All work and work practices shall be undertaken to regulatory, legislative and manufacturer requirements. Where installation only is required, Unit MEM25015A (Assemble and install equipment and accessories/ancillaries) should be selected.
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	Where technical drawings are interpreted, Unit MEM09002B (Interpret technical drawing) should also be considered. Where load shifting equipment, such as ride on forklifts/pallet trucks, is used, Unit MEM11010B (Operate mobile load shifting equipment) should also be considered. Where moveable and fixed load shifting equipment, such as pendant cranes, travelling overhead cranes, monorail hoists and chain blocks etc., is used, Unit MEM11022B (Operate fixed/moveable load shifting equipment) should also be considered. Band: A Unit Weight: 8
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare installation site	1.1.Site features are checked using appropriate measuring equipment. 1.2.Non-compliance with specification is reported to appropriate authority. 1.3.Modifications are undertaken with approval of appropriate authority. 1.4.Installation site and components are prepared.
2. Install marine engines/plant	2.1.All work is carried out safely, in accordance with site procedures and relevant Australian standards. 2.2.Engine/plant components and ancillary equipment are prepared for correct sequential installation. 2.3.Engine/plant is installed in accordance with manufacturer's site specifications. 2.4.Engine/plant is checked for conformance to specifications, and modifications/adjustments are undertaken to standard operating procedure. 2.5.Engine/plant is installed in accordance with specifications. 2.6.Site conditions are finalised in accordance with OHS requirements and standard procedures. 2.7.Documentation is completed to required specifications.
3. Test engine/plant systems and ancillary equipment	3.1.Work/test requirements for engine/plant and ancillary equipment are identified. 3.2.Engine/plant and ancillary equipment is tested for correct operation using instruments appropriate to the testing task. 3.3.Operational function is assessed and verified.
4. Collect data and localise fault conditions	4.1.Drawings/diagrams and operational specifications are used to identify and localise fault conditions. 4.2.Built-in fault indicators and error codes are examined and interpreted, and results are recorded to standard procedures. 4.3.Fault condition is localised to major component level.
5. Analyse and report test results	5.1.Test results are analysed/verified against operational specifications and localised faults are confirmed. 5.2.Potential and actual faults are reported according to standard procedures.

ELEMENT	PERFORMANCE CRITERIA
	5.3. Corrective action is planned. 5.4. Action plan is recorded/documented.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Look for evidence that confirms skills in:

- interpreting relevant drawings, specifications and instructions
- checking site for correct location, dimensions and levels
- preparing site
- preparing surfaces, materials and components for installation
- checking machine/plant for compliance
- following safety measures
- installing and fixing components
- levelling, aligning, coupling and connecting engine/plant (excluding electrical connections)
- restoring site
- disposing of waste in accordance with legislative requirements
- completing reports and other documents
- interpreting operational data of engine/plant and ancillary equipment
- selecting and using test equipment
- testing and verifying engine/plant and ancillary equipment operation
- identifying faults from built-in fault indicators, error codes
- analysing test results against specifications for faults

Required knowledge

Look for evidence that confirms knowledge of:

- safe working practices
- equipment used to check various site features and their use
- marine systems, specifications, applications and non-compliance procedures
- applicable safety equipment and personal protective equipment
- relevant codes, standards
- fixing/fastening methods components
- levelling, alignment, coupling and connection requirements

REQUIRED SKILLS AND KNOWLEDGE

- relevant person(s) for making electrical connections
- cleaning and clearing requirements
- waste disposal obligations and regulations
- reporting and recording requirements
- operational requirements/specifications of engine/plant and ancillary equipment
- testing procedures and principles
- normal operating characteristics of engine/plant and ancillary equipment
- faults and malfunctions
- error indications in built-in devices
- methods of determining fault condition
- procedures for reporting faults
- causes/faults in engine/plant and ancillary equipment
- procedures for recording/documenting corrective maintenance activity

Evidence Guide

EVIDENCE GUIDE

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

Overview of assessment

A person who demonstrates competency in this unit must be able to install marine systems. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

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

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with installing marine systems, or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****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. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Engine/plant components and ancillary equipment

- Stabilisers may include electric, hydraulic or mechanically operated fin and/or tab types
- Steering systems may include hydraulic, cable and wire-operated units
- Fuel systems may include petrol and diesel supply operations

Instruments

Mechanical, pneumatic/electro-pneumatic, electronic (analog/digital) and associated instruments that measure variables such as temperature, pressure, flow rate, levels, lights, density or any other operational variable

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Co-requisite units		

Competency field

Competency field	Marine craft construction
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