



Australian Government

Department of Education, Employment and Workplace Relations

AURR346131B Install marine engines, controls and instruments

Release: 1

AURR346131B Install marine engines, controls and instruments

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to install, test and commission inboard and outboard engines, system controls and instrumentation to a vessel. It requires the ability to identify and confirm work requirements, prepare for, install and commission engines, controls or instruments and complete work finalisation processes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	This unit applies to individuals who undertake installation, testing and commissioning of inboard and outboard engines, system controls and instrumentation to a vessel in a marine environment.
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Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

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. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for work	1.1. Confirm nature and scope of work to be carried out 1.2. Locate occupational health and safety (OHS) and workplace environmental and sustainable procedures and practices applicable to the work 1.3. Source installation procedures and relevant workshop manuals and manufacturer information 1.4. Determine installation method in accordance with OHS, environmental and industry regulations, and guidelines and enterprise procedures 1.5. Set up work area
2. Install inboard/outboard engine	2.1. Carry out engine installation in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices 2.2. Test inboard or outboard engine for correct operation, make required adjustments and re-test 2.3. Determine the need for water testing
3. Install controls/steering system	3.1. Carry out installation in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices 3.2. Test controls/steering system for correct operation, make required adjustments and re-test 3.3. Determine the need for water testing
4. Install instruments/accessories	4.1. Carry out installation in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices 4.2. Test instruments and accessories for correct operation, make required adjustments and re-test 4.3. Identify the need for water testing
5. Commission the installation	5.1. Test vessel engine/steering system/controls/instruments or accessories under normal conditions for correct operation and in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices
6. Clean up work area and maintain	6.1. Make final inspection 6.2. Clean and inspect equipment and tooling according

ELEMENT	PERFORMANCE CRITERIA
equipment	to workplace requirements 6.3. Tag unserviceable equipment and faults identified in accordance with workplace requirements 6.4. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons, as required 6.5. Clean work area, dispose of waste and scrap, and store tools and equipment in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills include:

- technical skills to the level required to use workplace technology related to the installation of marine engines, controls and instruments, to perform diagnosis and repair actions, and to use workplace computerised technology for the reporting and recording of actions
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities, and to report work outcomes and problems
- literacy skills to the level required to understand information related to work orders, including common industry terminology and safety procedures, to interpret technical information and specifications, and to record servicing details
- numeracy skills to the level required to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning and scheduling problems, and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

REQUIRED SKILLS AND KNOWLEDGE**Required knowledge**

Required knowledge includes:

- construction and operating principles of inboard and outboard engines, control systems and instrumentation
- installation procedures
- measuring and testing procedures
- commissioning procedures
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including OHS, personal safety and environment, relevant to installing marine engines, controls and instruments
- organisational policies and procedures, including quality, reporting and recording procedures, related to installing marine engines, controls and instruments

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

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

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- install and test prior to placing in service a minimum of three (3) inboard and outboard engines to workplace and manufacturer and component supplier requirements within workplace timeframes
- install and test prior to placing in service a minimum of three (3) controls and steering systems to workplace and manufacturer and component supplier requirements within workplace timeframes
- install and test prior to placing in service a minimum of three (3) instruments and accessories to workplace and manufacturer and component supplier requirements within workplace timeframes
- test prior to placing in service
- complete workplace and equipment records and workplace clean-up requirements.

Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:

EVIDENCE GUIDE	
	• workplace location or simulated workplace • materials relevant to the installation of marine engines, controls and steering, instruments and accessories • equipment, hand and power tools appropriate to the installation of marine engines, controls and steering, instruments and accessories • specifications and work instructions.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge. • Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
Guidance information for assessment	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

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. 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.

RANGE STATEMENT	
Recommissioning	Recommissioning may include: • engine system inspection • reading service data • compiling reports • testing, inspecting, adjusting, cleaning, and repairing components and systems
Installation	Installation may include: • minor adjustments, alignment and operational testing • functional operation • functional operation and testing of components
Tooling and equipment	Tooling and equipment may include: • hand tools • testing equipment, including multimeters • power tools • air tools • specialist tools and equipment
Materials	Materials may include: • spare parts • lubricants • fluids • cleaning materials
Safe operating procedures	Safe operating procedures may include: • operational risk assessment and treatments • toxic substances • electrical safety • machinery movement and operation • manual and mechanical lifting and shifting • working in proximity to others
Information/documents	Information/documents may include: • verbal, written and graphical instructions issued by authorised internal and external persons • parts listing prices and catalogues • inventory systems • material safety data sheets (MSDS)

RANGE STATEMENT	
	• diagrams or sketches • engineer's design specifications and instructions • manufacturer specifications • industry standards (e.g. American Boat and Yacht Council, National Marine, Manufacturer's Association and US Coast Guard) • Australian standards • workplace specifications and requirements
Legislative requirements	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: • award and enterprise agreements • industrial relations • Australian standards • Australian Design Rules • confidentiality and privacy • OHS • the environment • equal opportunity • anti-discrimination • duty of care
OHS requirements	OHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include: • personal protective equipment and clothing • safety equipment • first aid equipment • hazard and risk control • elimination of hazardous materials and substances • manual handling, including shifting, lifting and carrying • emergency procedures • road rules • safe driving policy
Environmental requirements	Environmental requirements may include:

RANGE STATEMENT	
	• waste management • noise • dust • clean-up management
Organisational policies and procedures	Organisational policies and procedures may include: • quality policies and procedures, including Australian standards • OHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures

Unit Sector(s)

Unit sector	Marine
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Co-requisite units

Co-requisite units	

Competency field

Competency field	
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