Australian Government

Department of Education, Employment and Workplace Relations

AURR201104A Service inboard engines and components

Release: 1

AURR201104A Service inboard engines and components

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to service inboard engines and components. It requires the ability to identify and confirm work requirements, service the inboard engines and to complete work finalisation processes. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Application of the Unit

Application of the unit	This unit applies to individuals who undertake and document the servicing of inboard engines and components in a marine environment.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	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 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. 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 service procedures and relevant workshop manuals and manufacturer's information 1.4. Check and prepare tools, equipment and materials 1.5. Decide service method in accordance with OHS, environmental and industry regulations, and guidelines and enterprise procedures 1.6. Set up work area
2. Service engine and engine components	2.1. Conduct service in accordance with manufacturer and component supplier specifications, and OHS and workplace environmental and sustainable procedures and practices 2.2. Conduct pre-start checks, make required adjustments and re-test 2.3. Apply appropriate lubricants to engine 2.4. Check that protective guards, cowlings and safety features are in place according to workplace expectations 2.5. Determine the need for water testing
3. Clean up work area and finalise work	3.1. Seal engine orifices against ingress of foreign matter 3.2. Clean engine according to workplace requirements 3.3. Clean and inspect equipment and tooling according to workplace requirements 3.4. Tag unserviceable equipment and faults identified in accordance with workplace requirements 3.5. Finalise and process work completion documentation, update customer and warranty information and give to appropriate persons as required 3.6. 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 servicing of inboard engines and components, including use of workplace computerised technology for the testing, reporting and recording of results
- 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, plans and safety procedures, to interpret technical information and specifications and to prepare reports
- 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 knowledge

Required knowledge includes:

- operating principles, construction and types of inboard engines
- servicing procedures and methodologies for different engines types
- minor adjustment procedures for different engines types
- types of lubricants and application methods
- service and repair manuals (hard copy and electronic)
- manufacturer and component supplier specifications, including workshop manuals and repair guides related to the servicing of marine engines and engine components
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including OHS, personal safety and environment, relevant to the servicing of inboard engines and components
- organisational policies and procedures, including quality requirements, reporting and recording procedures related to servicing inboard engines and components

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 servicing methods and techniques appropriate to the circumstances • complete preparatory activity in a systematic manner • service a range of marine inboard engines and components to workplace and manufacturer requirements and within workplace timeframe • 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:
	  • appropriate worksite
	  • a range of marine inboard engines and components requiring servicing
	  • specifications and work instructions
	  • equipment, hand and power tooling appropriate to repairing marine engines
	  • relevant information, including manufacturer specifications.

EVIDENCE GUIDE	
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.	
Inboard marine engines	Marine engines may include: • 2-stroke petrol and diesel • 4-stroke petrol and diesel
Vessels	Vessels may include: • single or multi-hull • inboard or outboard drive

RANGE STATEMENT	
Servicing methods	Servicing methods may include: • on- and off-site repairs • minor adjustments and operational testing • replacement of fluids and filters
Pre-start checking procedures	Pre-start checking procedures may include: • running to operating temperature • priming oil • checking engine fluid levels, including lubrication and coolant • checking fuel system for leaks • checking for abnormal noises • checking for pressures • checking gauges and warning devices for operation
Tooling and equipment	Tooling and equipment may include: • hand tools • testing equipment, including multimeters • power tools • air tools • specialist tools and equipment • lubricating equipment • measuring equipment • pressure gauges • vacuum gauges • manufacturer's special stools
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

RANGE STATEMENT	
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 • Repair Times manuals • material safety data sheets (MSDS) • 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) • industry codes of practice • Australian standards • workplace specifications and requirements • current driver's licence
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

RANGE STATEMENT	
	• 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: • 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

Co-requisite units

Co-requisite units		

Competency field

Competency field	