



Australian Government

MARB003 Service marine internal combustion engines, and propulsion and auxiliary systems

Release: 1

MARB003 Service marine internal combustion engines, and propulsion and auxiliary systems

Modification History

Release 1. New unit of competency.

Application

This unit involves the skills and knowledge required to perform basic servicing of marine internal combustion engines, and propulsion and auxiliary systems.

This unit applies to engine workers in the maritime industry on vessels with a propulsion power up to 750 kW in near coastal waters.

This unit has links to legislative and certification requirements.

Pre-requisite Unit

Not applicable.

Competency Field

B – Equipment Checking and Maintenance

Unit Sector

Not applicable.

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Prepare for work

- 1.1 Planned maintenance program is accessed to determine servicing requirements
- 1.2 Inspections are conducted and additional non-routine servicing requirements are determined
- 1.3 Manufacturer specifications for equipment are obtained
- 1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by servicing work
- 1.5 Equipment is safely isolated according to regulations and work health and safety (WHS)/occupational health and safety

		(OHS) requirements
	1.6	Tools and equipment are selected and checked for serviceability
	1.7	Work area is prepared
2	Carry out routine service	2.1 Equipment is inspected throughout servicing and inspection results are compared with manufacturer specifications
	2.2	Servicing tasks are carried out to specification
	2.3	Mechanical equipment and system components are checked with appropriate instruments
	2.4	Unserviceable equipment is tagged according to workplace procedures and appropriate personnel are notified
3	Repair and replace faulty components	3.1 Faulty items or components are removed using appropriate tools and equipment according to workplace procedures
	3.2	Replaceable items are selected or serviceable items are fitted according to manufacturer specifications
	3.3	Adjustments are made to equipment or components to ensure compliance with specifications
	3.4	Operational check is carried out on system to ensure compliance with manufacturer specifications
4	Clean up and complete documentation	4.1 Work area is cleared and cleaned
	4.2	Materials are disposed of or recycled according to legislative and workplace requirements
	4.3	Tools and equipment are cleaned, checked and stored according to workplace procedures
	4.4	Maintenance report is completed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of

competency

Range of Conditions

Specifies different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Equipment includes one or more of the following:

- auxiliary equipment and associated spaces
- cooling systems
- firefighting equipment
- fuel systems
- gearbox
- lubricating systems
- marine two- and four-stroke:
 - diesel engines
 - petrol engines
- propeller and immediate shafting alignment
- pumping systems
- refrigeration systems
- sterndrive and water jet drive units
- steering systems

Tools and equipment include one or more of the following:

- hand and power tools
- specialised tools
- test equipment

Servicing tasks include one or more of the following:

- cleaning:
 - coolers
 - filters
- greasing
- oiling
- replacing:
 - anodes
 - shaft seals and gland packing

- belt drives
- pumps
- topping up oils

Materials include one or more of the following:

- cleaning products
- rags
- refrigerant gas
- spent oil
- used components

Unit Mapping Information

This is a new unit. This unit is equivalent to MARB2002A Service marine internal combustion engines and propulsion and auxiliary systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=772efb7b-4cce-47fe-9bbd-ee3b1d1eb4c2>

Assessment Requirements for MARB003 Service marine internal combustion engines, and propulsion and auxiliary systems

Modification History

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- implementing safe and environmentally responsible work practices
- implementing workplace environmental and waste management procedures correctly
- reading and interpreting:
 - manufacturer specifications
 - safety data sheets (SDS)/material safety data sheets (MSDS).

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- basic combustion process
- basic electronic control unit and governor maintenance
- basic reverse/reduction gearbox maintenance
- basic timing diagrams
- circulating pumps and maintenance
- controllable pitch propellers maintenance
- cooling systems and cooling system maintenance
- couplings types, fittings, keys and keyways, securing nuts, locking
- environmental responsibilities, regulations and legislative requirements
- fuel systems and fuel system maintenance
- intake system and system maintenance
- instrumentation maintenance
- intermediate bearing maintenance
- lube oil:
 - system and system maintenance
 - contamination
- lubricating systems and systems maintenance
- maintenance of:
 - drive systems, belts, clutches, motors
 - hydraulic systems

- pumping systems
- refrigeration systems
- sea water piping including corrosion control
- shaft seals and rudder stock, glands and packings
- steering systems
- marine two- and four- stroke:
 - diesel engines
 - petrol engines
- own ability and limits to rectify irregularities and faults
- principles and procedures of lubrication
- propeller and intermediate shafting alignment
- routine servicing of:
 - firefighting equipment in engine space
 - valves
- stern drive and water jet drive units maintenance
- types, characteristics and functions of equipment/tools used in maintenance
- work health and safety (WHS)/occupational health and safety (OHS) requirements and work practices.

Assessment Conditions

Assessors must satisfy National Vocational Education and Training Regulator (NVR)/Australian Quality Training Framework (AQTF) assessor requirements.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

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

Resources for assessment must include access to:

- tools, equipment, machinery, materials and personal protective equipment currently used in industry
- applicable documentation such as legislation, regulations, codes of practice, workplace procedures and operational manuals
- range of relevant exercises, case studies and/or simulations.

Links

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