



Australian Government

AURRTF001 Diagnose and repair petrol and diesel marine fuel systems

Release: 1

AURRTF001 Diagnose and repair petrol and diesel marine fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in marine fuel systems. It involves preparing for the task, recognising and managing safety hazards, selecting the correct diagnostic procedure, carrying out the diagnosis and repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry. Marine fuel systems include those found in both inboard and outboard engines, and diesel and petrol vessels. The unit does not apply to diagnosis and repair of LNG and CNG fuel systems.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.

Unit Sector

Technical – Fuel Systems

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to diagnose and repair marine fuel system	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted 1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Diagnostic tools and equipment are selected and checked for serviceability
2. Identify hazards and understand safety requirements	2.1 Safety risks applicable to the vessel type are identified and managed 2.2 Methods to assess presence of fumes are undertaken and

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	ventilation requirements are applied 2.3 Hazards and work health and safety standards associated with the work are identified and risks are managed
3. Diagnose marine fuel system	3.1 Diagnostic tests are carried out according to workplace procedures, and <i>safety and environmental requirements</i> 3.2 Faults are identified from diagnostic test results and causes of faults are determined 3.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
4. Repair marine fuel system	4.1 Hazards associated with undertaking the repair are assessed and managed before beginning work 4.2 Repair options are analysed and those most appropriate to the circumstances are selected 4.3 Repair tools, equipment and materials are selected and checked 4.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, workplace procedures, and safety and environmental requirements, and without causing damage to components or system 4.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace standards and system or vessel is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance and are not explicit in the performance criteria.

Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret information from manufacturer and workshop literature when seeking marine fuel system specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	- clarify instructions - report diagnostic findings and make repair recommendations.
Numeracy skills to:	measure marine fuel system components and use basic mathematical operations, including addition, subtraction, multiplication and division and subtraction, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	use equipment, including fume and vapour detector and bilge blower.

Range of Conditions

This section specifies 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.

Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Safety and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with flammable diesel and petrol fuels - environmental requirements, including procedures for trapping, storing and disposing of fluids and vapours released from fuel systems.
<i>Safety risks</i> must include:	- differing fuel types, including: - petrol - diesel - varying motor type, including: - inboard - outboard

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AURRTF001 Diagnose and repair petrol and diesel marine fuel systems (Release 1)	N/A	New unit	No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURRTF001 Diagnose and repair petrol and diesel marine fuel systems

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

diagnose and repair a fault in three marine fuel systems fitted to different vessels. This must include at least one petrol fuel system and one diesel petrol fuel system.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing marine fuel systems, including procedures for working with flammable fuels
- environmental requirements, including procedures for trapping, storing and disposing of fluids released from fuel systems
- diagnostic testing procedures for marine fuel systems, including:
 - fuel pump pressure, volume and vacuum testing
 - air and fuel leak testing
 - exhaust gas analysis
- repair procedures for marine fuel systems
- post-repair testing procedures for marine fuel systems.
- knowledge of how to identify, capture and remove fumes, including:
 - understanding of ventilation requirements
 - use of bilge blower
 - use of fume and vapour detectors
- hazards associated with confined spaces
- potential sources and causes of ignition
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Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting.

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to the carburettors that they have worked on, e.g. repair orders.

Assessors must verify performance evidence through questioning on skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- marine repair workplace or simulated workplace
- workplace instructions
- manufacturer marine fuel system specifications
- three different vessels or engines with faults in the fuel systems
- diagnostic equipment for marine fuel systems
- tools, equipment and materials appropriate for maintenance and repair of marine fuel systems.
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