



**Australian Government**

# **AURRTE007 Diagnose and repair marine inboard engines**

**Release: 1**

## AURRTE007 Diagnose and repair marine inboard engines

### Modification History

| Release   | Comment                 |
|-----------|-------------------------|
| Release 1 | New unit of competency. |

### Application

This unit describes the performance outcomes required to diagnose and repair faults in the inboard spark ignition and compression ignition engines of marine vessels. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the marine service and repair industry.

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

### Competency Field

Marine

### Unit Sector

Technical - Engines

### 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. |

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|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Prepare to diagnose and repair inboard engine             | 1.1 Job requirements are determined from workplace instructions<br>1.2 Diagnostic information is sourced and interpreted<br>1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected<br>1.4 Hazards associated with the work are identified and risks are managed<br>1.5 Diagnostic tools and equipment are selected and checked according for serviceability                                                                                                                                                                                                                                                                                                                          |
| 2. Diagnose engine                                           | 2.1 Diagnostic tests are performed according to workplace procedures and <b>safety requirements</b><br>2.2 Faults are identified from diagnostic test results and causes of faults are determined<br>2.3 Diagnosis findings are reported according to workplace procedures, including initial recommendations for necessary repairs or adjustments                                                                                                                                                                                                                                                                                                                                                                             |
| 3. Dismantle engine                                          | 3.1 Tools, equipment and materials are selected and checked<br>3.2 Engine is dismantled as required according to workplace procedures, and safety and <b>environmental requirements</b><br>3.3 Engine is cleaned and components arranged for inspection according to workplace procedures, and safety and environmental requirements<br>3.4 Engine components are measured and compared with manufacturer specifications<br>3.5 Final repair recommendations are made and reported according to workplace procedures                                                                                                                                                                                                           |
| 4. Repair and reassemble engine                              | 4.1 Repair information is sourced and interpreted<br>4.2 Repair options are analysed and those most appropriate to the circumstances are selected<br>4.3 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 systems<br>4.4 Engine is reassembled according to manufacturer specifications, workplace procedures and safety requirements<br>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 |

| <b>Elements</b>                           | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| 5. Complete work processes                | <p>5.1 Final inspection is made to ensure work is to workplace expectations and vessel or engine is presented ready for use or stored according to workplace procedures</p> <p>5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected</p> <p>5.3 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.4 Workplace documentation is processed according to workplace procedures</p> |

## 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.

| <b>Skills</b>                      | <b>Description</b>                                                                                                                                                                                                                                                                   |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning skills to:                | <ul style="list-style-type: none"> <li>locate appropriate sources of information efficiently.</li> </ul>                                                                                                                                                                             |
| Reading skills to:                 | <ul style="list-style-type: none"> <li>interpret information from manufacturer and workshop literature when seeking engine specifications and procedures.</li> </ul>                                                                                                                 |
| Writing skills to:                 | <ul style="list-style-type: none"> <li>legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.</li> </ul>                                                                  |
| Oral communication skills to:      | <ul style="list-style-type: none"> <li>clarify instructions</li> <li>report diagnostic findings and make repair recommendations.</li> </ul>                                                                                                                                          |
| Numeracy skills to:                | <ul style="list-style-type: none"> <li>measure engine components and use basic mathematical operations, including addition, subtraction, multiplication and division, to calculate distances, areas, volumes, tolerances and deviations from manufacturer specifications.</li> </ul> |
| Planning and organising skills to: | <ul style="list-style-type: none"> <li>plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.</li> </ul>                                                                                         |
| Technology skills to:              | <ul style="list-style-type: none"> <li>use precision measuring equipment, such as micrometers and dial bore gauges.</li> </ul>                                                                                                                                                       |

## 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.

|                                                        |                                                                                                                                                                                                      |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b><i>Safety requirements</i></b> must include:        | <ul style="list-style-type: none"><li>work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for lifting and supporting inboard engines.</li></ul> |
| <b><i>Environmental requirements</i></b> must include: | <ul style="list-style-type: none"><li>procedures for trapping, storing and disposing of fluids released from engines.</li></ul>                                                                      |

## Unit Mapping Information

Equivalent to AURRTE3007 Diagnose and repair inboard engines and components

## Links

Companion Volume implementation guides are found in VETNet -

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