



Australian Government

AURRTR007 Install marine electrical systems and components

Release: 1

AURRTR007 Install marine electrical systems and components

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install low voltage marine electrical systems and components, such as dash instrumentation, switch and fuse panels, bilge pumps, lighting, global positioning systems (GPS), depth sounders, fish finders, communications equipment and radars. It involves preparing for the task, installing and testing the operation of the electrical systems and components, 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 - Electrical and Electronic

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 install marine electrical system and components	1.1 Job requirements are determined from workplace instructions 1.2 Installation procedures and information are sourced and interpreted 1.3 Installation options are analysed and those most appropriate to

Elements	Performance Criteria
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	the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked according for serviceability
2. Install and commission electrical system and components	2.1 System is checked for correct application and components are checked for damage 2.2 System and components are installed according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to components or systems 2.3 Installed system and components are tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures and safety requirements 2.4 Final adjustments are made and marine electrical systems and components are re-tested in normal operating conditions
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and vessel is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 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 specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting work performed and recording parts and material used.

Skills	Description
Oral communication skills to:	- clarify instructions - report findings and make installation recommendations.
Numeracy skills to:	measure components and use basic mathematical operations, including addition, subtraction, multiplication and division, 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.
Problem solving skills to:	determine most appropriate electrical system and component installation positions on the vessel.
Technology skills to:	use measuring equipment, such as rulers, vernier calipers, test lights and multimeters.

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 requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - checking and dealing with flammable gas build-up in boats, including liquefied petroleum gas (LPG) and hydrogen, prior to starting electrical system work - working safely with potentially high current electrical systems.
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Unit Mapping Information

Equivalent to AURRTR3002 Install marine electronic systems and components and AURRTR3004 Install marine electrical systems and components

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 AURRTR007 Install marine electrical systems and components

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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:

- install the following marine electrical components on two different vessels:
 - switch and fuse panels
 - bilge pump
 - lighting
 - depth sounder or fish finder
 - global positioning system (GPS).

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing marine electrical systems and components, including procedures for:
 - checking and dealing with flammable gas build-up in boats, including liquefied petroleum gas (LPG) and hydrogen, prior to starting electrical system work
 - working safely with potentially high current electrical systems
- construction and operating principles of marine electrical systems and components, including:
 - dash instrumentation
 - switch and fuse panels
 - bilge pumps
 - lighting
 - depth sounders and fish finders
 - GPS

- marine radios
- marine battery charge management systems
- procedures for selecting, installing and testing marine electrical systems and components in vessels, including:
 - dash instrumentation
 - switch and fuse panels
 - bilge pumps
 - lighting, including marine safety regulations for vessel lighting
 - depth sounders and fish finders
 - GPS
 - marine radios
- procedures for installing and testing marine electrical systems and components on a bus topography.

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 marine electrical systems and components they have installed in vessels, 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:

- workplace location or simulated workplace
- workplace instructions
- manufacturer electrical system and component specifications
- two different vessels requiring installation of marine electrical systems and components
- the following electrical components:
 - switch and fuse panels
 - bilge pump
 - lighting
 - depth sounder or fish finder
 - GPS
- tools, equipment and materials appropriate for installing marine electrical systems and components.

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