



Australian Government

AURETR025 Test, charge and replace batteries and jump-start vehicles

Release: 1

AURETR025 Test, charge and replace batteries and jump-start vehicles

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to test, charge, replace, retest and secure a range of automotive batteries, including vehicle or machinery jump-starting procedures. It involves preparing for the task, inspecting and testing the battery to determine serviceability, charging, jump-starting, removing and replacing, and undertaking the final retesting of batteries, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The batteries include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

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

Competency Field

Electrical

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 test, charge and replace batteries	1.1 Job requirements are determined according to workplace instructions

Elements Elements describe the essential outcomes.	Performance Criteria 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.
and jump-start vehicle	1.2 Technical information for testing batteries and equipment safe operating procedures are accessed and interpreted from vehicle or machinery and battery manufacturer specifications 1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools, equipment and materials are selected and checked for serviceability
2. Test battery and determine serviceability	2.1 Battery is inspected and tested according to manufacturer specifications, workplace procedures, and safety and environmental requirements 2.2 Battery cables, terminals and case are visually inspected to determine faults or damage 2.3 Electrolyte levels are checked and topped up as required 2.4 Battery and terminals are cleaned using correct equipment and battery cleaning materials 2.5 Battery voltage and load are checked to determine if battery requires charging, jump-starting or replacement
3. Charge battery	3.1 Technical information for charging is interpreted from vehicle or machinery and battery manufacturer specifications 3.2 Tools and equipment for charging battery are identified, selected and prepared according to manufacturer specifications and workplace procedures 3.3 Electrolyte levels are checked and topped up as required 3.4 Battery charge rate is determined and battery charger is connected to battery according to manufacturer specifications, workplace procedures and safety requirements 3.5 Battery is charged according to manufacturer specifications, workplace procedures and safety requirements 3.6 Battery charger is turned off and disconnected, and electrolyte levels are rechecked, according to manufacturer specifications, workplace procedures and safety requirements as required
4. Carry out jump-start procedures	4.1 Jump-start is carried out according to manufacturer specifications, workplace procedures and safety requirements, and without causing damage to vehicle or machinery 4.2 Battery voltage is identified and confirmed as being appropriate to jump-start procedures and vehicle or machinery 4.3 Leads are connected and disconnected in correct sequence and polarity according to manufacturer specifications, workplace

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	procedures and safety requirements
5. Remove and replace battery	5.1 Appropriate power source memory back-up device is connected to ensure no loss of power to accessories as required 5.2 Battery terminals are disconnected according to manufacturer specifications, workplace procedures and safety requirements 5.3 Battery is removed from vehicle according to manufacturer specifications, workplace procedures and safety requirements 5.4 <i>Replacement battery is chosen</i> appropriate to electrical and physical specifications and measurements of vehicle or machinery 5.5 Battery is replaced and secured according to manufacturer specifications, workplace procedures and safety requirements 5.6 Battery terminals are reconnected and tightened according to manufacturer specifications, workplace procedures and safety requirements 5.7 Post-replacement testing is carried out to confirm battery charging system is operating to manufacturer specifications, any reported problems are resolved, and no other problems are present
6. Complete work processes	6.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 6.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recycled material is collected 6.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 6.4 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
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Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	- interpret safety data sheets (SDS), and safe operating procedures in manufacturer specifications and workplace procedures - interpret text, symbols and wiring diagrams in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation.
Oral communication skills to:	- clarify instructions - report inspection findings and make recommendations.
Numeracy skills to:	- identify, interpret and match components and requirements to manufacturer specifications, including: - battery types - battery identification numbers and specifications - cold cranking amp (CCA) and reserve capacity (RC) battery rating requirements - use mathematical formulas and operations to calculate correct charge rate and charging period for the type and capacity of battery.
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 specialised tools and equipment relating to testing, charging and replacing batteries and jump-starting vehicles correctly and safely, including battery chargers, hydrometers and jumper leads.

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>Tools, equipment and materials</i> must include:	- load testing devices - hydrometers - multimeters - jumper leads - battery chargers - battery cleaning materials.
<i>Safety and environmental</i>	work health and safety (WHS) and occupational health and

requirements must include:	safety (OHS) requirements, including procedures for: • safely operating: • battery testing equipment • battery charging equipment • selecting and using personal protective equipment (PPE), including safety glasses • identifying hazards and controlling risks associated with: • battery, vehicle and machinery movement before carrying out work • wearing jewellery while working around high current wiring systems • environmental requirements, including procedures for: • following SDS to trap, store and dispose of toxic and corrosive substances • disposing of or recycling batteries.
Determining battery charge rate must include:	• calculating correct charge rate • calculating charging period for type and capacity of battery.
Choosing replacement battery must include:	• determining battery specifications to suit vehicle or machinery manufacturer specifications, including correct: • voltage • CCA and RC ratings.

Unit Mapping Information

Equivalent to AURETR3025 Test, charge and replace batteries

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 AURETR025 Test, charge and replace batteries and jump-start vehicles

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Performance Evidence

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

- test two different types of automotive batteries
- charge two batteries, in which the work must involve:
 - slow or trickle charging one battery
 - rapid charging the second battery
- remove and replace batteries from two different vehicles or machinery
- jump-start two different vehicles or machinery.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to testing, charging and replacing batteries and jump-start vehicles, including procedures for:
 - safely operating:
 - battery testing equipment
 - battery charging equipment
 - selecting and using personal protective equipment (PPE), including safety glasses
 - identifying hazards and controlling risks associated with:
 - battery, vehicle and machinery movement before carrying out work
 - wearing jewellery while working around high current wiring systems
- environmental requirements, including procedures for:
 - following safety data sheets (SDS) to trap, store and dispose of toxic and corrosive substances

- disposing of or recycling batteries
- location and content of manufacturer specifications, workplace procedures, and SDS
- types, application and operation of batteries, including:
 - lead acid batteries, including deep cycle batteries
 - gel batteries
 - absorbed glass mat batteries
 - calcium batteries
 - lithium ion and lithium ion phosphate batteries
- battery connection methods for 6 volt, 12 volt, 24 volt and 48 volt, including:
 - series
 - parallel
 - series parallel
- battery classification methods, including:
 - cold cranking amps (CCA)
 - reserve capacity (RC)
 - amp hour rating
- battery testing procedures, including:
 - testing safety requirements
 - visual inspection procedures
 - voltage drop testing
 - hydrometer testing
 - high rate discharge testing
- battery charging procedures, including:
 - charging safety requirements
 - slow, fast and trickle charging
 - battery memory retention
- battery replacement procedures, including:
 - replacement safety requirements
 - terminal disconnection
 - battery selection
 - battery installation and terminal connection
 - securing battery in vehicle
 - system recalibration procedures
- battery jump-start procedures, including:
 - vehicle and personnel safety requirements
 - battery terminal disconnection
 - jumper lead connection and disconnection.

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 batteries that they have tested, charged, replaced and jump-started, 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:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer battery specifications
- PPE for testing, charging, removing and replacing batteries and jump-starting vehicles and machinery, including safety glasses
- two different types of serviceable batteries
- two different vehicles or machinery requiring jump-starting
- tools, equipment and materials appropriate for battery testing, charging and replacement, including:
 - load testing device
 - hydrometer
 - multimeter
 - jumper leads
 - battery charger
 - battery cleaning materials.

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