

Training Package	Automotive Industry Retail, Service and Repair (AUR05)	HSC Requirements and Advice
Unit title	Service, maintain or replace batteries	
Unit code	Unit descriptor	HSC Indicative Hours
AURE218670A	<p>This unit covers the competence to inspect, service, maintain or remove and replace batteries.</p> <p>The unit includes identification and confirmation of work requirement, preparation for work, testing of batteries, analysis of test results, servicing and maintenance of batteries and completion of work finalisation processes, including clean up and documentation.</p>	5

Evidence Guide		HSC Requirements and Advice
<p>The evidence guide identifies critical aspects, knowledge and skills to be demonstrated to confirm competence for this unit. This is an integral part of the assessment of competence and should be read in conjunction with the Range Statement.</p>		
Critical aspects of evidence	Underpinning knowledge	Key Terms and Concepts
<p>It is <u>essential</u> that competence in this unit signifies ability to transfer competence to changing circumstances and to respond to unusual circumstances in the critical aspects of:</p> <ul style="list-style-type: none"> • observing safety procedures and requirements • communicating effectively with others involved in or affected by the work • selecting methods and techniques appropriate to the circumstances • completing preparatory activity in a systematic manner • accurately interpreting inspection results • testing carried out to manufacturer/component supplier requirements • conducting servicing, removal and replacement in accordance with workplace and manufacturer/component supplier requirements • completing work within workplace timeframes • vehicle/equipment presentation to customer in compliance with workplace requirements. 	<p>A working knowledge of:</p> <ul style="list-style-type: none"> • OH&S and environmental regulations/requirements, equipment, material and personal safety requirements • dangers of working with battery testing equipment • operating principles of batteries and chargers and their relationship to each other • inspection procedures • testing procedures • enterprise quality procedures • work organisation and planning processes. 	<ul style="list-style-type: none"> • award provisions • batteries/battery terminals • battery acid • battery components • battery removal and replacement • battery test equipment • calibration • clean-up procedures • compliance/non-compliance • effective communication • electrical safety • electrolytes • emergency procedures • enterprise quality procedures • fault reporting • hazards • inspection procedures • interpretation and analysis of test results • job card • machinery movement • managing work activities • manufacturers' specifications • materials • occupational health and safety (OHS)

Evidence Guide cont/d			HSC Requirements and Advice
Context of assessment	Method of assessment	Specific resource requirements for this unit	Key Terms and Concepts
<p>Application of competence <u>is</u> to be assessed in the workplace or simulated worksite.</p> <p>Assessment <u>is to</u> occur using standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment <u>is to</u> comply with regulatory requirements, including Australian Standards.</p>	<p>Assessment <u>must</u> satisfy the endorsed assessment guidelines of the automotive industry's RS&R [Retail, Service & Repair] Training Package.</p> <p>Assessment methods <u>must</u> confirm consistency and accuracy of performance together with application of underpinning knowledge.</p> <p>Assessment <u>must</u> be by direct observation of tasks, with questioning on underpinning knowledge and it must also reinforce the integration of key competencies.</p> <p>Assessment <i>may</i> be applied under project related conditions and require evidence of process.</p> <p>Assessment <u>must</u> confirm a reasonable inference that competence is able to be under the particular circumstance, and is able to be transferred to other circumstances.</p> <p>It is <i>preferable</i> that assessment reflects a process rather than an event and occurs over a period of time to cover varying quality circumstances. Evidence of performance <i>may</i> be provided by customers, team leaders/ members or other persons subject to agreed authentication arrangements.</p>	<p>The following <u>should</u> be made available:</p> <ul style="list-style-type: none"> • workplace location or simulated workplace • material relevant to servicing, maintenance or replacement of batteries • equipment, hand and power tooling appropriate to servicing, maintenance or replacement of batteries • activities covering mandatory task requirements • specifications and work instructions. 	<ul style="list-style-type: none"> • operational, manual and mechanical lifting and shifting • personal protective equipment (PPE) • presentation of vehicle/equipment to customer • principles of batteries and chargers • problem-solving skills • quality assurance • regulations • recording, reporting and communication • risk management • safe disposal of batteries • safe work practices • servicing and maintenance • sources of information • specification charts • standard operating procedures • team environment • test results • testing procedures • tools, equipment and consumables • toxic substances • vehicle storage • vehicular movement • verbal, non-verbal and written communication • work instructions • work organisation and planning processes • workplace/organisation practices • workplace documentation • workplace timeframes • workshop manuals • work/schedule documentation.

Specific key competencies, underpinning and employability skills required to achieve the performance criteria

These include a number of processes learned throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The details below highlight how these competencies are applied in the attainment of this unit.

Application of the key competencies in this unit are to satisfy the nominated level in which:

Level 1 – relates to working effectively within set conditions and processes;

Level 2 – relates to management or facilitation of conditions or processes; and

Level 3 – relates to design, development and evaluation of conditions or process.

How will the candidate apply the following key competency in this unit? The candidate will need to:

Collect, analyse and organise information	Research and interpretive skills sufficient to locate, interpret and apply manufacturer/component supplier procedures, workplace policies and procedures. Analytical skills for identification and analysis of technical information.	Level 1
Communicate ideas and information	Communicate ideas and information. Plain English literacy and communication skills in relation to dealing with customers and team members. Questioning and active listening skills for example when obtaining information from customers. Oral communication skills sufficient to convey information and concepts to customers.	Level 1
Plan and organise activities	Plan and organise activities for own work activities, including making good use of time and resources, sorting out priorities and monitoring one's own performance.	Level 1
Work with others and in a team	Interact effectively with other persons both on a one to one basis and in groups, including understanding and responding to the needs of a customer and working effectively as a member of a team to achieve a shared goal.	Level 1
Use mathematical ideas and techniques	Use mathematical ideas and techniques to correctly calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks.	Level 1
Solve problems	Establish safe and effective work processes which anticipate and/or resolve problems and downtime, to systematically develop solutions, to avoid or minimise reworking and avoid wastage.	Level 1
Use technology	Use workplace technology related to servicing, maintenance and replacement of batteries, including use of specialist tooling, measuring equipment and communication devices and the reporting/ documenting of results.	Level 1

Element	Performance Criteria	Range Statement	HSC Requirements and Advice
1 Prepare to inspect battery	1.1 Nature and scope of work requirements are identified and confirmed.	<p>The Range Statement provides advice to interpret the scope and context of this unit of competence, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:</p> <p>Unit scope</p> <ul style="list-style-type: none"> work involved <u>includes</u> all vehicles and equipment. <p>Unit context</p> <ul style="list-style-type: none"> work <u>requires</u> individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team environment work <u>is</u> carried out in accordance with award provisions. <p>Communications</p> <ul style="list-style-type: none"> communications <u>are to</u> include, but are not limited to verbal and visual instructions and fault reporting and <u>may</u> include site specific instructions, written instructions, plans or instructions related to job/task, telephones and pagers. <p>Quality requirements</p> <ul style="list-style-type: none"> quality requirements <u>are to</u> include, but are not limited to regulations, including Australian Standards, internal company quality policy and standards and enterprise operations and procedures. 	<p>Learning experiences for the HSC must address:</p> <p>A range of sources for work instructions and procedures including:</p> <ul style="list-style-type: none"> work schedules/plans/specifications job card role/duty statement roster standard operating procedures (SOP) Material Safety Data Sheets (MSDS) diagrams/sketches manuals <ul style="list-style-type: none"> workshop product regulations/legislation/codes of practice workplace/organisation guidelines, specifications, requirements, policies and procedures Australian Standards workplace/organisation bulletins/memos engineer's design specifications/instructions. <p>An awareness of various modes of communication to receive work instructions including:</p> <ul style="list-style-type: none"> verbal <ul style="list-style-type: none"> face-to-face (supervisor to employee) telephone/mobile phone/pager PA system two-way radio workplace meetings written communication <ul style="list-style-type: none"> work plans/job cards memos/messages job description/statement workplace forms rosters facsimile email intranet non-verbal <ul style="list-style-type: none"> gestures signals signage diagrams.

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			<p>Strategies for obtaining, understanding and clarifying instructions/procedures including:</p> <ul style="list-style-type: none"> • correct sourcing and selection of information • consult appropriate personnel • active listening • open and closed questions. <p>A range of opportunities to read, interpret and follow information/instructions for a range of work tasks of varying degrees of difficulty.</p> <p>Planning and preparation for a range of tasks/activities applicable to servicing, maintaining and replacing batteries.</p> <p>A basic overview of the role of employees in quality assurance.</p>
	<p>1.2 OH&S requirements, including individual State/Territory regulatory requirements and personal protection needs are observed throughout the work.</p>	<p>Safety (OH&S)</p> <ul style="list-style-type: none"> • OH&S requirements <u>are to</u> be in accordance with legislation/regulations/codes of practice and enterprise safety policies and procedures. This <i>may</i> include protective clothing and equipment, use of tooling and equipment, workplace environment and safety, handling of material, use of fire fighting equipment, enterprise first aid, hazard control and hazardous materials and substances • personal protective equipment <u>is to</u> include that prescribed under legislation/regulation/codes of practice and workplace policies and practices • safe operating procedures <u>are to</u> include, but are not limited to the conduct of operational risk assessment and treatments associated with vehicular movement, toxic substances, electrical safety, machinery movement and operation, manual and mechanical lifting and shifting and working in proximity to others and site visitors • emergency procedures related to this unit <u>are to</u> include but may not be limited to emergency shutdown and stopping of 	<p>Learning experiences for the HSC must address:</p> <p>An awareness of safe work practices and procedures for inspecting, servicing/maintaining, removing and replacing batteries.</p> <p>Selection, use and application of a range of personal protective equipment (PPE) for working with batteries.</p> <p>Importance of correctly fitting PPE.</p> <p>Awareness of a range of hazards associated with working with batteries and battery test equipment including:</p> <ul style="list-style-type: none"> • working with electricity • arcing across battery terminals • risk of fire and explosion • working with acids • manual lifting • working in proximity to others. <p>A basic understanding of risk management.</p> <p>Procedures to follow in the event of an emergency including location of:</p> <ul style="list-style-type: none"> • eye and body wash facilities • fire blankets

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		<p>equipment, extinguishing fires, enterprise first aid requirements and site evacuation.</p> <p>Statutory/regulatory authorities</p> <ul style="list-style-type: none"> statutory/regulatory authorities <i>may</i> include Federal, State and local authorities administering acts, regulations and codes of practice. 	<ul style="list-style-type: none"> fire extinguishers suitable for fires associated with batteries. <p>An awareness of damage that can be caused by the acid in batteries to vehicle paint, body panels and fabrics.</p>
	<p>1.3 Procedures and information such as workshop manuals and specifications, and tooling are sourced.</p>	<p>Information</p> <ul style="list-style-type: none"> information sources <i>may</i> include, but are not limited to: <ul style="list-style-type: none"> verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets, diagrams or sketches safe work procedures related to the servicing, maintenance and replacement of batteries regulatory/legislative requirements pertaining to automotive industry, including Australian Design Rules engineer's design specifications and instructions organisation work specifications and requirements instructions issued by authorised enterprise or external persons Australian Standards. <p>Tooling and equipment</p> <ul style="list-style-type: none"> tooling and equipment <i>may</i> include hand tooling, meters, gauges, and load testing devices. 	<p>Learning experiences for the HSC must address:</p> <p>Knowledge of a range of sources of information for battery service, maintenance and replacement including:</p> <ul style="list-style-type: none"> workshop manuals <ul style="list-style-type: none"> factory general/generic electronic specification charts. <p>General features, purpose, maintenance and working knowledge of a range of tools, equipment and consumables for servicing batteries including:</p> <ul style="list-style-type: none"> hydrometer battery load tester automatic voltage regulation (AVR) multimeter torch battery lift strap battery consumables <ul style="list-style-type: none"> distilled water sulphuric acid.
	<p>1.4 Method options are analysed and those most appropriate to the circumstances are selected and prepared.</p>		<p>Learning experiences for the HSC must address:</p> <p>Knowledge of:</p> <ul style="list-style-type: none"> operating principles <ul style="list-style-type: none"> batteries chargers relationship between batteries and chargers.

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			Knowledge of a range of methods of servicing batteries including: <ul style="list-style-type: none"> • inspect • test • clean • overhaul/service • remove and replace. Knowledge of the main components requiring inspection including: <ul style="list-style-type: none"> • terminals • charge • fluid levels.
	1.5 Technical and/or calibration requirements for testing batteries are sourced and support equipment is identified and prepared.		Learning experiences for the HSC must address: The use of a range of tools and equipment used to test batteries in accordance with manufacturers' specifications and workplace/organisation practices and standard operating procedures for: <ul style="list-style-type: none"> • connection • calibration.
	1.6 Warnings in relation to working with batteries are observed.		
2 Conduct battery test	2.1 Methods for the conduct of tests are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.		Learning experiences for the HSC must address: Knowledge of a range of methods for testing batteries including: <ul style="list-style-type: none"> • visual inspection • crank test • dynamic load test.
	2.2 Test results are compared with manufacturer/component supplier specifications to indicate compliance or non compliance.		
	2.3 Results are documented with evidence and supporting information and recommendations made.		Learning experiences for the HSC must address: Knowledge of appropriate recommendations for a range of battery test results.

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	<p>2.4 Report is forwarded to persons for action in accordance with workplace procedures.</p>		<p>Details required when recording battery test analysis results including:</p> <ul style="list-style-type: none"> • test conducted • fault displayed • repair required • parts/consumables required • estimate of time/cost (quote) • importance of repair <ul style="list-style-type: none"> - urgent - non-urgent. <p>Learning experiences for the HSC must address:</p> <p>Understanding lines of reporting and communication with supervisor/team leader and others in the workplace.</p> <p>Appropriate/relevant people including:</p> <ul style="list-style-type: none"> • supervisor/team leader • mentor • trainer • colleagues.
3 Service batteries	<p>3.1 Information for servicing is accessed from manufacturer/component supplier specifications and correctly interpreted.</p>		<p>Learning experiences for the HSC must address:</p> <p>Knowledge of correct procedures for servicing batteries including:</p> <ul style="list-style-type: none"> • connecting and disconnecting battery levels • charging batteries <ul style="list-style-type: none"> - adequate ventilation • adding fluid to a battery. <p>An awareness of the damage that can be caused to vehicle electrical systems while servicing the battery and methods of preventing this damage.</p>
	<p>3.2 Material, components, tooling and equipment to complete work are identified, selected and prepared in accordance with site procedures.</p>	<p>Materials</p> <ul style="list-style-type: none"> • materials <i>may</i> include battery consumables and cleaning material. 	
	<p>3.3 Electrolyte levels are checked and topped up in accordance with site</p>		<p>Learning experiences for the HSC must address:</p>

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	procedures.		An understanding of the nature and function of electrolytes in batteries.
	3.4 Batteries and terminals are cleaned in accordance with site procedures.	Environmental requirements <ul style="list-style-type: none"> environmental requirements <u>are to</u> include but are not limited to waste management, noise, dust and clean up management. 	Learning experiences for the HSC must address: Tools and materials for cleaning batteries and terminals including: <ul style="list-style-type: none"> wire brush emery cloth cleaning solution of bi-carbonate soda and water.
4 Remove and replace battery	4.1 Procedures and information are identified and sourced.		
	4.2 Technical and tool requirements for removal and replacement are identified and support equipment is identified and prepared.		
	4.3 Methods for the conduct of removal and replacement are implemented in accordance with workplace procedures and manufacturer/component supplier specifications.		Learning experiences for the HSC must address: An awareness of the importance of using battery lifting straps or clamps to avoid injury and/or damage. An awareness of government legislation regarding the safe disposal of batteries.
	4.4 All adjustments made during the replacement are in accordance with manufacturer/component supplier specifications.		
5 Prepare vehicle/equipment for delivery to customer and/or storage	5.1 Work/schedule documentation is completed.		Learning experiences for the HSC must address: Knowledge of the features and purpose of workplace documentation including: <ul style="list-style-type: none"> job card warranty documentation. Information to be included in workplace documentation including:
			<ul style="list-style-type: none"> manufacturer/supplier details all relevant vehicle details:

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			<ul style="list-style-type: none"> - make - model - year - rego/VIN numbers. <p>The importance of recording information that is:</p> <ul style="list-style-type: none"> • clear • legible • accurate • concise • appropriate in terms of industry terminology.
	5.2 Final inspection is made to ensure protective guards, safety features and cowlings are in place.		<p>Learning experiences for the HSC must address:</p> <p>Understanding of the importance of undertaking a final inspection.</p>
	5.3 Final inspection is made to ensure work is to workplace expectations.		<p>Knowledge of purpose of and standard procedures for undertaking final inspection including:</p> <ul style="list-style-type: none"> • visual inspection of covers • correct refit of battery hold-down bracket and cables.
	5.4 Vehicle/equipment is cleaned and/or stored to workplace expectations.		<p>Learning experiences for the HSC must address:</p> <p>Clean-up procedures with proper consideration of the environment and occupational health and safety (OHS).</p> <p>A range of cleaning techniques including:</p> <ul style="list-style-type: none"> • wiping • washing • brushing • sweeping • scraping • use of cleaning agents (chemicals, solvents and detergents). <p>An awareness of issues relating to vehicle storage including:</p> <ul style="list-style-type: none"> • OHS considerations
			<ul style="list-style-type: none"> • security • ease of access.

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			<p>An awareness of issues relating to storage of tools and equipment including:</p> <ul style="list-style-type: none"> • climatic effects • OHS considerations • stability • security • ease of access. <p>Security of workplace equipment including:</p> <ul style="list-style-type: none"> • guards • storage racks • protective covers • lock-up procedures. <p>Knowledge of methods by which vehicles/equipment are stored and accessed.</p>
	5.5 Job card is completed and delivered to appropriate persons.		