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**AUTOMOTIVE ELECTRICAL AND  
ELECTRONICS**  
**Service an automotive battery**

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<b>level:</b>	2
<b>credit:</b>	2
<b>planned review date:</b>	December 2009
<b>sub-field:</b>	Motor Industry
<b>purpose:</b>	This unit standard is for people who wish to enter or are employed in the automotive service industry. People credited with this unit standard are able to: determine the serviceability of a lead-acid battery; replace a lead-acid battery on a vehicle; charge a lead-acid battery; and carry out an emergency start on a flat battery.
<b>entry information:</b>	Open.
<b>accreditation option:</b>	Evaluation of documentation by NZQA and industry.
<b>moderation option:</b>	A centrally established and directed national moderation system has been set up by the NZ Motor Industry Training Organisation.
<b>special notes:</b>	<ol style="list-style-type: none"><li>1 Legislation relevant to this unit standard includes but is not limited to – Hazardous Substances and New Organisms Act 1996; Health and Safety in Employment Act 1992.</li><li>2 Reference to <i>suitable test equipment</i> means industry approved test equipment that is recognised within the industry as being the most suited to complete the task to a professional and competent manner with due regard to safe working practices.</li></ol>

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**Elements and Performance Criteria**

**element 1**

Determine the serviceability of a lead-acid battery.

**performance criteria**

- 1.1 Test equipment is selected that will enable the serviceability of the battery to be determined.
- 1.2 Safe working practices are observed throughout the task according to legislative requirements.  
  
Range: personal safety, safety of others, no damage to equipment.
- 1.3 A battery is inspected visually and all physical defects are identified and reported to the supervisor.
- 1.4 The state of charge is determined and compared to the battery manufacturer's specifications.
- 1.5 Battery manufacturer's test procedures are followed.

**element 2**

Replace a lead-acid battery on a vehicle.

**performance criteria**

- 2.1 The battery is selected for the particular make and model of vehicle according to the battery and/or vehicle manufacturer's specifications.
- 2.2 Safe working practices are observed throughout the task according to legislative requirements.  
  
Range: personal safety, safety of others, no damage to equipment, vehicle safety.

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- 2.3 The battery is disconnected in the sequence specified by the vehicle manufacturer, and is removed ensuring that any electronic memories are protected.
- 2.4 The battery is replaced (installed and connected) in the manner specified by the vehicle manufacturer.

**element 3**

Charge a lead-acid battery.

**performance criteria**

- 3.1 Safe working practices are observed throughout the charging process according to legislative requirements.
- Range: personal safety, safety of others, no damage to equipment, battery safety.
- 3.2 The battery is cleaned, and the electrolyte level is checked and corrected so that it is ready for charging.
- Range: mixing electrolyte, adding electrolyte, adding water, precautions when topping up a dry battery.
- 3.3 The battery is connected to the charger in a manner appropriate to the charging method.
- 3.4 Charging is carried out under conditions appropriate to the charging method, until the charge is complete.
- 3.5 Checks are made throughout the charging process to ensure minimum risk of overheating, loss of electrolyte, and gassing.

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**element 4**

Carry out an emergency start on a flat battery.

**performance criteria**

- 4.1 Safe working practices are observed throughout the task according to legislative requirements.
- Range: personal safety, safety of others, vehicle and battery safety.
- 4.2 Flat battery is connected to an emergency starting device in a manner that ensures that the risk of explosion and component damage is eliminated.
- Range: two of the following emergency starting devices – portable starting pack, spike resistant jumper leads and slave battery, replacement battery.
- 4.3 The engine is started, in accordance with the vehicle manufacturer's instructions, and run until warm, and then stopped.
- 4.4 Battery is disconnected from the emergency starting device in a manner that ensures that battery explosion and damage to the vehicle's electrical and electronic circuits do not occur.
- 4.5 The engine is restarted and run, to ensure the starting system functions according to the vehicle manufacturer's specifications.

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**Comments on this unit standard**

Please contact the NZ Motor Industry Training Organisation [jlane@mito.org.nz](mailto:jlane@mito.org.nz) if you wish to suggest changes to the content of this unit standard.

**Please Note**

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

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Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0014 which can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.