



Australian Government

AURBTR3001 Service electric power assist bicycles

Release 1

AURBTR3001 Service electric power assist bicycles

Modification History

Release	Comment
Release 1	Replaces AURB318301A Service electric power assist bicycles Unit code updated to meet policy requirements Reference to OHS legislation replaced with new WHS legislation

Unit Descriptor

Unit descriptor	<p>This unit of competency describes the skills and knowledge required to perform routine maintenance on electric power assisted bicycle systems and components.</p> <p>It requires the ability to identify maintenance requirements, interpret manufacturer's instructions and specifications, service the additional electric bicycle components, and test the bicycle for safe and efficient operation.</p> <p>Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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Application of the Unit

Application of the unit	This unit applies to individuals who undertake routine maintenance of electric bicycles in a bicycle retail, service and repair environment.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to maintain bicycle	1.1. Confirm customer requirements and gain approval for work in accordance with workplace procedures 1.2. Identify and source technical information and specifications 1.3. Check tooling and equipment for availability, conformity with specifications and safe condition 1.4. Prepare work area and set up equipment and materials
2. Perform maintenance on bicycle	2.1. Inspect bicycle for faults and worn or damaged components using visual, aural and tactile inspections, and measurements 2.2. Check electrical components, battery condition and motor connectors at plug located on rear stay or front fork 2.3. Compare conditions found with bicycle specifications and customer requirements 2.4. Document any components needing repair additional to routine maintenance, and report to appropriate person or notify customer in accordance with workplace procedures 2.5. Plan maintenance sequence, including post-maintenance testing and checking process 2.6. Select and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 2.7. Perform maintenance operations according to plan and without damage to bicycle components or equipment 2.8. Replace non-serviceable and broken parts in accordance with workplace procedures 2.9. Check bicycle operation in accordance with workplace procedures
3. Prepare bicycle for return to customer	3.1. Clean and prepare bicycle for delivery to customer 3.2. Clean and store portable tooling and equipment in approved designated areas 3.3. Complete workplace records, customer file and warranty information as required by enterprise 3.4. Clean up work area and dispose of waste materials in accordance with workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

Required skills include:

- technical skills to the level required to safely use tooling and equipment, including a multimeter to maintain an electric power assist bicycle, test the unit and make adjustments and prepare bicycle for delivery to customer
- communication skills to the level required to confirm work requirements and specifications, to communicate effectively regarding work requirements with supervisor, other workers and customers, to report work outcomes and problems, and to relate to people from a range of social, cultural and ethnic backgrounds and of varying physical and mental abilities
- literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures, prepare reports and interpret technical information and specifications
- numeracy skills to the level required to correctly complete tests and measurements to determine safe operation to specifications
- problem-solving skills to the level required to identify technical and procedural problems to avoid planning, scheduling problems and time and material wastage
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

Required knowledge

Required knowledge includes:

- bicycle terminology
- operating principles of electric bicycles
- understanding of throttle response, power and performance, pedal assist function and throttle function
- manufacturer and/or component supplier specifications
- component function and application
- maintenance procedures
- testing procedures and adjustment methods
- tools and equipment used in bicycle maintenance
- Australian standards applicable to electric power assist bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to bicycle maintenance
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to bicycle maintenance

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently:

- observe safety procedures and requirements
- communicate effectively with others involved in or affected by the work
- select methods and techniques which are appropriate to the circumstances
- complete preparatory activity in a systematic manner
- conduct maintenance operations without damage to components or tooling and equipment
- maintain a power assisted bicycle in compliance with Australian standards and workplace requirements.

Context of, and specific resources for assessment

- The application of competency is to be assessed in the workplace or a simulated environment that reflects as far as possible the actual working environment.
- Assessment is to occur using standard and authorised work practices, safety requirements and environmental constraints.
- Assessment is to comply with relevant regulatory requirements, including specified Australian standards.
- Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.
- The following resources should be made available:
 - an electric power assist bicycle
 - equipment, hand and power tools appropriate to maintaining electric bicycles
 - technical specifications and standards
 - workplace documentation.

Method of assessment

- Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.
- Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of Required Skills and Knowledge.
- Assessment methods must be by direct observation of tasks and

EVIDENCE GUIDE	
	<p>include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</p> <ul style="list-style-type: none">• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.• Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.
Guidance information for assessment	Assessment processes and techniques must be culturally sensitive and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Electric power assist bicycles	<p>Electric power assist bicycles may include:</p> <ul style="list-style-type: none"> • bicycle styled products with both throttle and PAS functions that look and function like a bicycle with or without the motor engaged, and with 200 watts of rated power at the wheel <p>Newer laws to be implemented within two years will allow for 250 watts and throttle to 6 km/h then PAS</p> <p>Note: Older styled scooter type products with lead acid batteries and foot platform DO NOT meet current regulations</p>
Bicycle components	<p>Electric power assist bicycle components, additional to normal bicycles, may include:</p> <ul style="list-style-type: none"> • motor hubs and heavy duty spokes • electric controllers • battery and charger
Maintenance items	<p>Maintenance items may include:</p> <ul style="list-style-type: none"> • battery charging • controller operation • wiring • connectors at motor plug, controller, brake cut outs, throttle and PAS sensor
Tooling and equipment	<p>Tooling and equipment may include:</p> <ul style="list-style-type: none"> • hand tooling • electrical meters • hand-held power tooling • floor stands, workbench and air tooling
Materials	<p>Materials may include:</p> <ul style="list-style-type: none"> • lubricants • tapes • fitting consumables • cleaning materials
Testing	<p>Testing is to confirm:</p> <ul style="list-style-type: none"> • safety and efficiency

RANGE STATEMENT	
	<ul style="list-style-type: none"> proper operation of electric assist
Information/documents	<p>Information/documents may include:</p> <ul style="list-style-type: none"> hardcopy and electronic media verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches safe work procedures related to maintaining electric power assist bicycles regulatory/legislative requirements pertaining to bicycle safety engineer's design specifications and instructions organisation work specifications and requirements instructions issued by authorised enterprise or external persons Australian standards
WHS requirements	<p>WHS requirements are to be in accordance with applicable commonwealth, state or territory legislation and regulations, and organisational safety policies and procedures, and may include:</p> <ul style="list-style-type: none"> personal protective equipment and clothing safety equipment first aid equipment hazard and risk control elimination of hazardous materials and substances manual handling, including shifting, lifting and carrying emergency procedures
Legislative requirements	<p>Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include:</p> <ul style="list-style-type: none"> award and enterprise agreements industrial relations Australian standards Australian Design Rules confidentiality and privacy WHS the environment equal opportunity anti-discrimination relevant industry codes of practice duty of care
Environmental requirements	<p>Environmental requirements may include:</p>

RANGE STATEMENT	
	<ul style="list-style-type: none"> • waste management • noise • dust • clean-up management
Quality requirements	Quality requirements may include: <ul style="list-style-type: none"> • regulations, including Australian standards • internal organisational quality policies and procedures • enterprise operations and procedures
Organisational policies and procedures	Organisational policies and procedures may include: <ul style="list-style-type: none"> • quality policies and procedures, including Australian standards • WHS, sustainability, environment, equal opportunity and anti-discrimination • manufacturer specifications and industry codes of practice • safe work procedures • reporting and recording procedures

Unit Sector(s)

Unit sector	Bicycle
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Co-requisite units

Not applicable.

Competency field

Competency field	Technical - Electrical and Electronic
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