



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **AURB212171A Service and repair bicycle mechanical braking systems**

**Release: 1**

## AURB212171A Service and repair bicycle mechanical braking systems

### Modification History

Not Applicable

### Unit Descriptor

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
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| <b>Unit descriptor</b> | <p>This unit of competency describes the skills and knowledge required to inspect, plan and safely service, repair and test bicycle mechanical braking systems and complete documents.</p> <p>It requires the ability to interpret specifications, assess the condition of mechanical braking systems, and to select and use tooling and equipment.</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> <p>This unit replaces AURB212170A Service bicycle mechanical braking systems and AURB312166A Repair bicycle mechanical braking systems.</p> |
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### Application of the Unit

|                                |                                                                                                                                                                     |
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| <b>Application of the unit</b> | <p>This unit applies to individuals who undertake service and repair of components of mechanical braking systems in a bicycle servicing and repair environment.</p> |
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### Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

|                           |  |  |
|---------------------------|--|--|
| <b>Prerequisite units</b> |  |  |
|                           |  |  |
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## Employability Skills Information

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| <b>Employability skills</b> | This unit contains employability skills. |
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## Elements and Performance Criteria Pre-Content

|                                                                   |                                                                                                                                                                        |
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| Elements describe the essential outcomes of a unit of competency. | Performance criteria describe the performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide. |
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## Elements and Performance Criteria

| ELEMENT                                                                | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Prepare for work                                                    | 1.1. Confirm customer requirements and intended use of the unit in accordance with workplace procedures<br>1.2. Identify and check bicycle mechanical braking system service and repair requirements and specifications<br>1.3. Check tooling and equipment for availability, conformity with specifications and safe condition<br>1.4. Prepare work area and set up equipment and materials                                                                                                                                   |
| 2. Inspect bicycle mechanical braking system                           | 2.1. Inspect bicycle mechanical braking system for faults and worn or damaged components, using visual, aural and tactile inspections, and measurements<br>2.2. Compare conditions found with bicycle mechanical braking system specifications and customer requirements<br>2.3. Identify service and repair options for mechanical braking system<br>2.4. Document and cost service and repair items for customer approval in accordance with workplace procedures<br>2.5. Obtain customer approval for work to be undertaken |
| 3. Prepare for service and repair of bicycle mechanical braking system | 3.1. Plan service and repair sequence and determine availability of tooling and equipment<br>3.2. Ensure service and repair sequence plan includes post-service testing and checking process<br>3.3. Prepare list of parts and materials and determine availability<br>3.4. Identify need for additional persons to assist in repair process and make arrangements<br>3.5. Select and check tooling and equipment to meet job requirements                                                                                     |
| 4. Service and repair bicycle mechanical braking system                | 4.1. Perform service and repair operations for bicycle mechanical braking system according to plan<br>4.2. Use personal safety equipment and take precautions to protect others in the workplace<br>4.3. Use and maintain tooling and equipment in accordance with occupational health and safety (OHS) requirements<br>4.4. Check customer requirements and bicycle braking system specifications in accordance with workplace                                                                                                |

| ELEMENT                                   | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | <p>procedures</p> <p>4.5. Clear worksite of waste and spills at regular intervals in accordance with workplace procedures</p>                                                                                                                                                                                                                                                                                             |
| 5. Test bicycle mechanical braking system | <p>5.1. Operate bicycle braking system through its full range, noting test results, including non-conformity</p> <p>5.2. Check bicycle mechanical braking system, complete adjustments and prepare unit for delivery</p> <p>5.3. Clean and store portable tooling and equipment in approved designated areas</p> <p>5.4. Complete workplace records, customer file and warranty information as required by enterprise</p> |

## 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 use workplace technology related to servicing, repairing and testing of bicycle mechanical braking systems
- 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, complete records and interpret technical information and specifications
- numeracy skills to the level required to correctly count and measure to determine mechanical brake system condition and operation
- problem-solving skills to the level required to plan and organise activities and establish diagnostic processes which identify methods of servicing, repairing and testing bicycle mechanical braking systems
- team skills to the level required to work effectively and cooperatively with others to optimise workflow and productivity

#### Required knowledge

**REQUIRED SKILLS AND KNOWLEDGE**

Required knowledge includes:

- application of mechanical principles
- classification of bicycle mechanical braking systems and identification of system components
- purpose and requirements of bicycle mechanical braking systems and their relationship to suspension, wheels, drivetrain, frame and steering system
- material used in bicycle mechanical braking systems
- mechanical braking system service, repair and test procedures and techniques
- selection, checking and use of tooling and equipment
- manufacturer and/or component supplier specifications
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including OHS and environment, relevant to servicing and repairing bicycle mechanical braking systems
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to servicing and repairing bicycle mechanical braking systems

## 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 appropriate to the circumstances
- complete preparatory activity in a systematic manner
- inspect a range of bicycle mechanical brake systems and components and accurately identify required service and repair options
- service and repair a range of bicycle mechanical brake systems and components to manufacturer/ component supplier specifications
- test bicycle mechanical brake systems to manufacturer/component supplier specifications.

#### 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:
  - suitably equipped workplace or simulated workplace
  - area for safe testing of braking systems
  - a range of bicycle mechanical brake systems and components
  - material relevant to servicing and repairing bicycle mechanical braking systems

| <b>EVIDENCE GUIDE</b>                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | <ul style="list-style-type: none"> <li>• equipment and hand and power tooling appropriate to servicing and repairing bicycle mechanical braking systems</li> <li>• specifications and work instructions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Method of assessment</b>                | <ul style="list-style-type: none"> <li>• Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.</li> <li>• 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.</li> <li>• Assessment methods must be by direct observation of tasks and include questioning on Required Skills and Knowledge to ensure its correct interpretation and application.</li> <li>• Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</li> <li>• 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.</li> <li>• Competence in this unit may be assessed in conjunction with other functional units which together form part of the holistic work role.</li> </ul> |
| <b>Guidance information for assessment</b> | 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

| <b>RANGE STATEMENT</b>                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                               |
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| <p>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.</p> |                                                                                                                                               |
| <b>Mechanical braking system</b>                                                                                                                                                                                                                                                                                                                                                                    | <p>Mechanical braking system may include:</p> <ul style="list-style-type: none"> <li>• cantilever, disc, internal coaster and drum</li> </ul> |

| <b>RANGE STATEMENT</b>              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | brakes <ul style="list-style-type: none"> <li>• composite material brake pads</li> <li>• mechanical linkages</li> <li>• manual adjustment and integrated brake and gear levers</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Servicing and repair methods</b> | Servicing and repair methods are to include: <ul style="list-style-type: none"> <li>• on- and off-site servicing</li> <li>• servicing and manual adjustments of mechanical braking system components</li> <li>• communicating with customers</li> <li>• documenting and reporting on service</li> </ul>                                                                                                                                                                                                                                                                                                                            |
| <b>Tooling and equipment</b>        | Tooling and equipment may include: <ul style="list-style-type: none"> <li>• specific service and repair and general workshop equipment and tooling</li> <li>• floor stands, workbench and air tooling</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Materials</b>                    | Materials may include: <ul style="list-style-type: none"> <li>• spare parts and cleaning materials</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Communications</b>               | Communications may include, but are not limited to: <ul style="list-style-type: none"> <li>• verbal and visual instructions and fault reporting</li> <li>• site-specific instructions, written instructions and plans or instructions related to job/task</li> <li>• telephones and pagers</li> </ul>                                                                                                                                                                                                                                                                                                                              |
| <b>Information/documents</b>        | Information/documents may include: <ul style="list-style-type: none"> <li>• verbal or written and graphical instructions, signage, work schedules/plans/specifications, work bulletins, memos, material safety data sheets (MSDS), diagrams or sketches</li> <li>• safe work procedures related to bicycle mechanical braking systems</li> <li>• regulatory/legislative requirements pertaining to bicycle safety</li> <li>• engineer's design specifications and instructions</li> <li>• organisation work specifications and requirements</li> <li>• instructions issued by authorised enterprise or external persons</li> </ul> |

| <b>RANGE STATEMENT</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | <ul style="list-style-type: none"> <li>• Australian standards</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>OHS requirements</b>           | <p>OHS 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"> <li>• personal protective equipment and clothing</li> <li>• safety equipment</li> <li>• first aid equipment</li> <li>• hazard and risk control</li> <li>• elimination of hazardous materials and substances</li> <li>• manual handling, including shifting, lifting and carrying</li> <li>• emergency procedures</li> </ul>                                                 |
| <b>Legislative requirements</b>   | <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"> <li>• award and enterprise agreements</li> <li>• industrial relations</li> <li>• Australian standards</li> <li>• Australian Design Rules</li> <li>• confidentiality and privacy</li> <li>• OHS</li> <li>• the environment</li> <li>• equal opportunity</li> <li>• anti-discrimination</li> <li>• relevant industry codes of practice</li> <li>• duty of care</li> </ul> |
| <b>Environmental requirements</b> | <p>Environmental requirements may include:</p> <ul style="list-style-type: none"> <li>• waste management</li> <li>• noise</li> <li>• dust</li> <li>• clean-up management</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Quality requirements</b>       | <p>Quality requirements may include:</p> <ul style="list-style-type: none"> <li>• regulations, including Australian standards</li> <li>• internal organisational quality policies and procedures</li> <li>• enterprise operations and procedures</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |

**RANGE STATEMENT****Organisational policies and procedures**

Organisational policies and procedures may include:

- quality policies and procedures, including Australian standards
- OHS, 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

**Co-requisite units**

| Co-requisite units |  |  |
|--------------------|--|--|
|                    |  |  |
|                    |  |  |

**Competency field****Competency field**