



Australian Government

AURBTY003 Repair carbon fibre bicycle frames

Release: 1

AURBTY003 Repair carbon fibre bicycle frames

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to determine the extent of damage to carbon fibre bicycle frames, and undertake the necessary repairs. It involves preparing for the work, selecting and using specialist tools and equipment, assessing frame damage, selecting repair materials, repairing and finishing the carbon fibre frame to manufacturer specifications, and completing workplace processes and documentation.

It applies to those working in the bicycle retail, service and repair industry.

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

Competency Field

Bicycle

Unit Sector

Technical - Chassis and Frame

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. Inspect carbon fibre bicycle frame	1.1 Job requirements are determined from workplace instructions 1.2 Bicycle history, including riding incidents and accidents, is determined through discussion with customer 1.3 Bicycle frame is inspected for faults or damage using visual inspection methods and by comparing measurements against

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.
	manufacturer specifications 1.4 Non-destructive testing is arranged, as required 1.5 Hazards associated with the work are identified and risks are managed 1.6 <i>Repair assessment</i>, including replacement options for bicycle frame, is completed 1.7 Repair cost is calculated and documented for customer approval
2. Prepare for repair	2.1 Work area is prepared and repair sequence, including post-repair testing, is planned to avoid damage to bicycle, minimise waste and use time efficiently 2.2 Replacement parts and repair <i>materials</i> are prepared according to frame manufacturer specifications 2.3 <i>Tools and equipment</i>, including personal protective equipment (PPE), are selected and checked for serviceability
3. Repair carbon fibre frame	3.1 Frame surface is prepared for repair and contaminants are removed 3.2 Repairs to bicycle frame, including carbon fibre tubes and seat stay, are carried out according to repair plan, manufacturer specifications, and <i>safety and environmental requirements</i> 3.3 Repaired area of frame is sealed according to manufacturer specifications 3.4 Required replacement parts are checked and fitted according to manufacturer specifications 3.5 Tests are completed to ensure fibre frame repairs comply with manufacturer specifications, and problems outside scope of own role are referred to appropriate person 3.6 Carbon fibre bicycle frame is cleaned in preparation for delivery to customer
4. Complete work processes	4.1 Final inspection is made to ensure work meets workplace expectations and bicycle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected and stored 4.3 Tools and equipment are checked, reported if faulty, and stored according to workplace procedures 4.4 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
Learning skills to:	locate appropriate sources of information efficiently.
Writing skills to:	legibly and accurately fill out workplace documentation, including repair reports.
Oral communication skills to:	ask questions to clarify instructions and procedures, including with customers and suppliers.
Numeracy skills to:	- correctly interpret manufacturer specifications - take measurements to determine bicycle frame condition - use basic mathematical operations to calculate cost of repair.
Self-management skills to:	select and use appropriate equipment, materials and processes to repair and test carbon fibre frames.
Technology skills to:	set, adjust and use specialist tools and equipment to repair and test carbon fibre frames in line with workplace procedures.

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>Repair assessment</i> must include:	- bicycle history and cause of damage - frame construction method - cracks, chips, dents, loose joins and misalignment.
<i>Materials</i> must include:	- carbon fibre fabric and tapes of various grades and weights - unidirectional and woven fabric and braided sock - epoxy resin of repair qualified type - shrink tape - vacuum bag consumables - suitable sandpaper - cleaning materials.
<i>Tools and equipment</i> must include:	- sanding tools - bicycle frame jigs - curing oven.
<i>Safety and environmental</i>	work health and safety (WHS) and occupational health and safety

requirements must include:	(OHS) requirements, including procedures for: • manually handling bicycles and frames • identifying workplace hazards • using tools and equipment, including PPE • environmental requirements, including procedures for disposing of waste materials.
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Unit Mapping Information

Equivalent to AURBTY4003 Assess carbon fibre frames for repair

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 AURBTY003 Repair carbon fibre bicycle frames

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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 this unit's elements, performance criteria, range of conditions and foundation skills:

- assess two different damaged carbon fibre bicycle frames and repair them according to manufacturer specifications.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to assessing and repairing carbon fibre frames, including procedures for:
 - manually handling bicycles and frames
 - identifying workplace hazards
 - using tools and equipment, including personal protective equipment (PPE)
- environmental requirements, including procedures for disposing of waste materials
- key carbon frame bicycle terminology
- structure, properties and characteristics of carbon fibre material
- manufacturing processes of carbon fibre frames
- causes of damage to carbon fibre frames
- types of bicycle frames and their components
- types and use of tools and equipment used to repair carbon fibre bicycle frames
- techniques for repairing carbon fibre bicycle frames, including:
 - type of frame damage and defects
 - non-destructive testing procedures
 - measuring techniques
 - frame preparation techniques

- frame repair options
- testing procedures and safety checks.

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 carbon fibre bicycle frames that they have assessed and repaired, 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:

- bicycle workplace or simulated workplace
- workplace instructions detailing job requirements
- carbon fibre bicycle frame manufacturer specifications
- PPE required to repair carbon fibre bicycle frames
- material required to repair carbon fibre bicycle frames
- two different damaged carbon fibre bicycle frames
- tools and equipment appropriate for assessing and repairing carbon bicycle frames.

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