



Australian Government

AURBTJ3004 Repair and overhaul bicycle wheels and hubs

Release 1

AURBTJ3004 Repair and overhaul bicycle wheels and hubs

Modification History

Release	Comment
Release 1	Replaces AURB318267A Repair/overhaul bicycle wheels and hubs Unit code updated to meet policy requirements Minor changes to unit title Reference to OHS legislation replaced with new WHS legislation

Unit Descriptor

Unit descriptor	This unit of competency describes the skills and knowledge required to repair a range of bicycle wheels with different hub, spoke and rim configurations. It requires the ability to understand specifications and use tools and equipment to inspect, repair/overhaul and test bicycle wheels and hubs. No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
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Application of the Unit

Application of the unit	This unit applies to individuals who undertake the inspection, repair and testing of bicycle wheels and hubs in a bicycle retail, service and repair environment. Work requires individuals to demonstrate some judgement and problem-solving skills in managing own work activities and contributing to a productive team 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. Inspect bicycle wheel and hub	1.1. Check customer requirements and intended use of the unit in accordance with workplace procedures 1.2. Inspect bicycle wheel and hub for faults and worn or damaged components 1.3. Determine repairs by visual, aural and tactile inspections and measurements 1.4. Compare conditions found with bicycle wheel and hub specifications and customer use requirements 1.5. Identify repair options for bicycle wheel and hub in accordance with workplace procedures 1.6. Document and cost repairs and obtain customer approval for work to be undertaken
2. Prepare for repair/overhaul of bicycle wheel and hub	2.1. Plan repair/overhaul sequence, including post-repair testing and checking process 2.2. Determine availability of tooling and equipment 2.3. Prepare parts list and determine availability of replacement components 2.4. Identify additional persons to assist in repair process and confirm availability 2.5. Select tooling and equipment to meet job requirements and check for good working order
3. Repair/overhaul and test bicycle wheel and hub	3.1. Repair/overhaul bicycle wheel and hub according to plan 3.2. Use personal safety equipment and precautions to protect others in the workplace 3.3. Handle, maintain and use tooling and equipment in accordance with workplace health and safety (WHS) requirements 3.4. Check customer requirements and bicycle wheel and hub specifications following repair/overhaul procedures 3.5. Operate repaired bicycle wheel and hub through full range, noting test results, including non-conformity 3.6. Check repaired bicycle wheel and hub, complete adjustments and alignments and prepare unit for delivery
4. Complete work and clean up	4.1. Store portable tooling and equipment in approved designated areas 4.2. Update workplace records, customer file and warranty information as required by enterprise 4.3. Clean up work area and dispose of waste 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 to repair a range of bicycle wheels and hubs, perform tests and make adjustments
- 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 calculate time, assess tolerances, apply accurate measurements, calculate material requirements and establish quality checks
- 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 anatomy and terminology
- application of mechanical principles
- classification of bicycle wheels and identification of components
- purpose and requirements of bicycle wheels and their relationship to suspension, drivetrain, frame and steering systems
- purpose and requirements of a bicycle wheel hub and their relationship to suspension, wheels, drivetrain, frame and braking
- material used in bicycle wheels and hubs
- wheel and hub repair/overhaul procedures and techniques
- use of tooling and equipment
- Australian standards applicable to bicycles
- applicable commonwealth, state or territory legislation, regulations, standards and codes of practice, including WHS, personal safety and environment, relevant to repair/overhaul of bicycle wheels and hubs
- organisational policies and procedures, including quality requirements, reporting and recording procedures, and work organisation and planning processes, related to repair/overhaul of bicycle wheels and hubs

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
- identify wear or faults in bicycle wheels and hubs
- repair a range of different bicycle wheels and hubs to manufacturer/component supplier specifications
- test bicycle wheels and hubs 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:
 - a range of bicycle wheels, hubs and components
 - equipment, hand and power tools appropriate to repairing wheels and hubs
 - 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

	include questioning on Required Skills and Knowledge to ensure its correct interpretation and application. • 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.

Bicycle wheels and hubs

Bicycle wheels and hubs may include:

- spoked, disk and tri-spoked wheels
- steel, aluminium, deep dish, aero, composite material and disc type rims
- quick release, Allen head and nut wheel fasteners
- vertical and horizontal frame lugs
- high flange, low flange and integrated brake hubs
- disk, drum and coaster and internal foot brake hubs
- metal and composite hub material
- loose ball, cage and roller bearings
- steel, aluminium and composite spoke material
- straight gauge, double butted and bladed spokes
- spoke nipples
- spoke lacing patterns

Tooling and equipment

Tooling and equipment may include:

- hand tooling
- hand-held power tooling
- floor stands, workbench and wheel jigs

Materials

Materials may include:

- a range of bicycle wheels and hubs
- parts suitable for use in wheels and hubs
- lubricants
- cleaning materials

Wheel and hub repair methods

Wheel and hub repair methods are to include:

- replacing spokes
- tensioning spokes
- wheel truing
- rebuild/regrease front wheel hub
- rebuild/regrease rear wheel hub

Testing

Testing is to confirm:

- safety and efficiency

RANGE STATEMENT	
	- stable handling, turning and steering - no failure in parts of the bicycle
Information/documents	Information/documents may include: - 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 repairing bicycle wheels, hubs and components - 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	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: - 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	Legislative requirements are to be in accordance with applicable commonwealth, state or territory legislation, regulations, certification requirements and codes of practice, and may include: - 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	Environmental requirements may include

RANGE STATEMENT

	• waste management • noise • dust • clean-up management
Quality requirements	Quality requirements may include: • regulations, including Australian standards • internal organisational quality policies and procedures • enterprise operations and procedures
Organisational policies and procedures	Organisational policies and procedures may include: • 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 - Wheels and Tyres
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