



Australian Government

Assessment Requirements for AURBTR104 Diagnose and repair electric bicycles

Release: 1

Assessment Requirements for AURBTR104 Diagnose and repair electric bicycles

Modification History

Release	Comments
Release 1	This version first released with AUR Automotive Retail, Service and Repair Training Package Version 6.0

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- diagnose and repair a fault in the electric drivetrain system of two different electric bicycles, each time repairing a different fault from the following:
 - wheel speed sensor
 - charging system
 - battery pack
 - wiring harness and connectors
 - electric motor
 - controller.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- methods to locate and interpret information required to diagnose and repair electric bicycles, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair electric bicycles, including:
 - establishing serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures including:
 - examination of tools and equipment
 - storage of equipment
 - identification, tagging and isolation of faulty equipment
 - disposal of excess materials

- recycling procedures
- work health and safety (WHS) requirements relating to diagnosing and repairing electric bicycles, including procedures for:
 - using specialised tools and equipment, including multimeters
 - using appropriate personal protective equipment (PPE)
 - identifying hazards and controlling risks associated with:
 - working on high voltage electric drivetrain systems
 - wearing jewellery while working around high current wiring systems
- operating principles of electric bicycles and associated components, including:
 - generating principles, including Faraday's law and inducing an electromotive force (EMF)
- application, purpose and operation of electric bicycle systems and components, including:
 - battery packs:
 - chemistry and associated hazards and risks associated with each type
 - mounting and securing battery packs
 - electric drive motors:
 - brushless electric motors
 - brushed electric motors
 - wiring connectors
 - electric controllers:
 - interface display units
 - adjustment and calibration requirements
 - harness connections
 - wiring harnesses:
 - mounting and routing of wiring harnesses
 - continuity of electrical system
 - wiring gauges and capacity
 - measuring voltage, resistance and current across two points
 - throttle control systems
- diagnostic testing procedures for electric bicycle drivetrain systems, including:
 - using diagnostic flow charts
 - testing electrical systems, including procedures for:
 - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
 - checking resistance, current flow and voltage drop of electric bicycle driveline system circuits
 - electric motors
- repair procedures for electric bicycle systems, including:
 - removing and replacing faulty or damaged components
 - adjusting bicycle control system speed restrictors

- removing and replacing electric motors and batteries
- post-repair testing procedures for electric bicycles, including static and dynamic performance tests of electric bicycle.

Assessment Conditions

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 electric bicycles that they have worked on, 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
- manufacturer electric bicycle specifications
- two different bicycles with electric driveline system faults
- diagnostic equipment for electric bicycle systems, including:
 - multimeter
 - tools, equipment and materials appropriate for repairing electric bicycle driveline systems.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>