



**Australian Government**

# **AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems**

**Release: 1**

# AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems

## Modification History

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

## Application

This unit describes the skills and knowledge required to diagnose and repair faults in the electronically controlled braking systems of heavy commercial vehicles. The unit involves preparing for the task, sourcing a diagnostic testing strategy, diagnosing the cause of the fault, carrying out the repair, performing post-repair testing, and completing workplace processes and documentation.

The unit applies to those who work in the automotive service and repair industry. The heavy commercial vehicle electronic braking systems include those in heavy commercial vehicles. This unit does not apply to agricultural machinery or mobile plant machinery.

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

## Unit Sector

Mechanical – Heavy Vehicle Technical – Brakes

## Elements and Performance Criteria

| ELEMENT                                                                              | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                                     | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                          |
| 1. Prepare to diagnose and repair heavy commercial vehicle electronic braking system | 1.1 Identify job requirements from workplace instructions<br>1.2 Identify required information for diagnosis activity<br>1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures<br>1.4 Identify hazards and environmental issues associated with diagnose and repair activity, assess potential risks and implement control measures in line with workplace policies |

| ELEMENT                                                        | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                | <p>and procedures</p> <p>1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures</p>                                                                                                                                                                                                                                                                                                                                                                                  |
| 2. Diagnose heavy commercial vehicle electronic braking system | <p>2.1 Implement diagnostic tests set out in testing strategy according to manufacturer and workplace procedures, and workplace health and safety requirements</p> <p>2.2 Identify cause of fault through analysis of diagnostic test results</p> <p>2.3 Confirm and report cause of fault according to workplace procedures</p> <p>2.4 Develop and report recommendations for necessary repairs according to workplace procedures</p>                                                                                                      |
| 3. Repair heavy commercial vehicle electronic braking system   | <p>3.1 Identify required information for repair activity</p> <p>3.2 Identify required repair tools, equipment and materials required for repair activity and establish serviceability according to workplace procedures</p> <p>3.3 Carry out repairs according to workplace and manufacturer procedures, manufacturer specifications, workplace health and safety and environmental requirements</p> <p>3.4 Carry out post-repair testing according to workplace procedures, workplace health and safety and environmental requirements</p> |
| 4. Complete work processes                                     | <p>4.1 Conduct final inspection according to workplace procedures and confirm vehicle is ready for use</p> <p>4.2 Clear work area and dispose of or recycle materials according to workplace procedures</p> <p>4.3 Complete documentation according to workplace procedures</p>                                                                                                                                                                                                                                                             |

## Foundation Skills

*This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.*

| SKILL    | DESCRIPTION                                                                                                                                                  |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Learning | <ul style="list-style-type: none"> <li>Locates required sources of information efficiently</li> <li>Develops a sequenced plan for a specific task</li> </ul> |
| Reading  | <ul style="list-style-type: none"> <li>Organises and interprets technical information from workplace procedures, manufacturer procedures and</li> </ul>      |

| SKILL                   | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         | manufacturer specifications <ul style="list-style-type: none"> <li>Interprets text, symbols and wiring diagrams in information relating to heavy commercial vehicle electronic braking system testing and repair equipment from manufacturer specifications and workplace instructions and procedures</li> </ul>                                                                                                                                                                                                     |
| Oral communication      | <ul style="list-style-type: none"> <li>Clarifies instructions</li> <li>Obtains information from customers and supervisors</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 |
| Numeracy                | <ul style="list-style-type: none"> <li>Matches heavy commercial vehicle electronic braking system components and part identification numbers to workplace instructions, vehicle, machinery and component part lists, and manufacturer specifications</li> <li>Interprets vehicle heavy commercial vehicle electronic braking measurements and readings</li> <li>Measures voltage, current and resistance and uses mathematical operations</li> <li>Calculates deviations from manufacturer specifications</li> </ul> |
| Planning and organising | <ul style="list-style-type: none"> <li>Plans own work requirements</li> <li>Prioritises actions to achieve required outcomes</li> <li>Ensures tasks are completed within workplace timeframes</li> </ul>                                                                                                                                                                                                                                                                                                             |
| Technology              | <ul style="list-style-type: none"> <li>Uses precision measuring and diagnostic tools and equipment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        |

## Unit Mapping Information

Supersedes and is equivalent to AURHTB007 Diagnose and repair heavy commercial vehicle electronic braking systems.

## Links

Companion Volume Implementation Guide is found on VETNet -

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

# Assessment Requirements for AURHTB107 Diagnose and repair heavy commercial vehicle electronic braking systems

## Modification History

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## 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 electronic components of at least two different heavy commercial vehicle electronic braking systems.

## 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:

- techniques for reading and interpreting technical information, including circuit types, diagrams and symbols
- methods to locate and interpret information required to diagnose and repair heavy commercial vehicle electronic braking systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation
  - Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes
- workplace procedures required to diagnose and repair heavy commercial vehicle electronic braking systems, 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

- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy commercial vehicle electronic braking systems, including procedures for working safely with high air pressure systems and an electronically controlled actuator
- environmental requirements relating to diagnosing and repairing heavy commercial vehicle electronic braking systems
- operating principles of heavy commercial vehicle electronic braking systems and associated components, including:
  - electronic systems
  - pneumatic systems
- purpose and operation of heavy commercial vehicle electronic braking systems and components, including:
  - electronic control unit (ECU)
  - dual circuit pneumatic foot pedal control valve with electronic position sensing
  - front circuit electric over air modulation and relay valve
  - rear circuit electric over air modulation and relay valve
  - wheel speed sensors and pole wheel
  - tractor protection air valve
  - pressure sensor in airbag system or load sensor
- diagnostic testing procedures for heavy commercial vehicle electronic braking systems that comply with manufacturer specifications, including:
  - accessing and interpreting scan tool system data, including:
    - diagnostic trouble codes (DTCs)
    - live data
    - waveforms
  - using diagnostic flow charts
- repair procedures for heavy commercial vehicle electronic braking systems that comply with manufacturer specifications, including procedures for removing, replacing and adjusting braking system components
- post-repair testing procedures for heavy commercial vehicle electronic braking systems, including static and dynamic performance tests of electronic braking system.

## 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 heavy vehicle electronic braking systems 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:

- automotive repair workplace or simulated workplace
- workplace instructions
- manufacturer braking system specifications
- two different heavy commercial vehicles with faults in their electronic braking systems
- diagnostic equipment for heavy commercial vehicle electronic braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy commercial vehicle electronic braking systems.

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

## Links

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