



Australian Government

AURHTB101 Diagnose and repair heavy vehicle air braking systems

Release: 1

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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 air braking systems of heavy 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 air braking systems include those in agricultural machinery, heavy commercial vehicles 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 vehicle air braking system	1.1 Identify job requirements from workplace instructions 1.2 Identify required information for diagnosis activity 1.3 Analyse diagnostic options and source testing strategy to identify cause of fault using workplace and manufacturer procedures 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 and procedures

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

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	- Locates required sources of information efficiently - Develops a sequenced plan for a specific task
Reading	Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	Clarifies instructions

SKILL	DESCRIPTION
	Obtains information from customers and supervisors
Numeracy	- Measures braking system components - Uses mathematical operations - Calculates deviations and tolerances from manufacturer specifications
Planning and organising	- Plans own work requirements - Prioritises actions to achieve required outcomes - Ensures tasks are completed within workplace timeframes
Technology	Uses measuring and diagnostic equipment

Unit Mapping Information

Supersedes and is equivalent to AURHTB001 Diagnose and repair heavy vehicle air 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 AURHTB101 Diagnose and repair heavy vehicle air braking systems

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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 three heavy vehicle air braking systems as follows:
 - one disc braking system, in which the work must involve removing and refitting or replacing the brake actuators, disc pads and disc rotors
 - one drum braking system, in which the work must involve removing and refitting or replacing the brake actuators, brake shoes and drums
 - one air braking system, in which the work must involve removing and refitting or replacing at least one of the following:
 - air compressor, delivery and storage components
 - slack adjusters
 - pneumatic valve
 - electro-pneumatic valve and electronic control circuits.

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 heavy vehicle air braking systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair heavy vehicle air 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
- Australian Design Rules ADR35 and ADR38 relating to repairing heavy vehicle brakes, including:
 - key features and differences of both American and European braking systems
- workplace health and safety (WHS) requirements relating to diagnosing and repairing heavy vehicle air braking systems, including procedures for:
 - working safely with stored energy in springs and high air pressure systems
 - managing and controlling brake dust
 - removing and refitting wheel assemblies
- environmental requirements relating to diagnosing and repairing heavy vehicle air braking systems, including procedures for trapping, storing and disposing of hazardous materials and substances released from braking systems, including brake dust and fibres
- operating principles of heavy vehicle air braking systems and associated components, including:
 - levers
 - friction
 - pneumatics
 - electronics
- purpose and operation of heavy vehicle air braking systems and components, including:
 - disc braking systems
 - drum braking systems
 - air compressors, air storage, air dryers and valves
 - brake actuators
 - foot valves
 - air control valves
 - manual and automatic slack adjusters
 - trailer brake valves
 - pneumatic and electronic control circuits and valves
- diagnostic testing procedures for heavy vehicle air braking systems, including procedures for:
 - friction material wear
 - drum brake component serviceability
 - disc brake component serviceability
 - air pressure testing
 - air control system testing
 - air brake component inspection and evaluation
 - brake system stationary and mobile performance tests
- repair procedures for heavy vehicle air braking systems, including:

- procedures for removing, replacing and adjusting:
 - wheel end components, including disc braking systems and drum braking systems
 - air compressors, air storage, air dryers and valves
 - brake actuators
 - foot valves
 - manual and automatic slack adjusters
 - trailer brake valves
 - pneumatic and electronic control circuits and valves
- dismantling, repairing, reassembling and adjusting systems
- post-repair testing procedures for heavy vehicle air braking systems including stationary and mobile performance tests.

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 air 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 vehicles with faults in the air braking systems specified in the performance evidence
- diagnostic equipment for heavy vehicle air braking systems
- Australian Design Rules ADR35 and ADR38
- tools, equipment and materials appropriate for repairing and adjusting heavy vehicle air braking systems.

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

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