



Australian Government

AURLTB003 Diagnose and repair light vehicle hydraulic braking systems

Release: 1

AURLTB003 Diagnose and repair light vehicle hydraulic braking systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to diagnose and repair faults in the hydraulic braking systems of light vehicles. It involves preparing for the task, selecting the correct diagnostic procedure, carrying out the diagnosis and the repair, performing post-repair testing, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The hydraulic braking systems include those in light vehicles, light commercial vehicles or outdoor power equipment. This unit does not apply to agricultural machinery, heavy commercial vehicles, mobile plant machinery or motorcycles.

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

Competency Field

Mechanical - Light Vehicle

Unit Sector

Technical - Brakes

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. Prepare to diagnose and repair light vehicle	1.1 Job requirements are determined from workplace instructions 1.2 Diagnostic information is sourced and interpreted

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.
hydraulic braking system	1.3 Diagnostic options are analysed and those most appropriate to the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Diagnostic tools and equipment are selected and checked for serviceability
2. Diagnose braking system	2.1 Diagnostic tests are performed according to workplace procedures and <i>safety and environmental requirements</i> 2.2 Faults are identified from diagnostic test results and causes of faults are determined 2.3 Diagnosis findings are reported according to workplace procedures, including recommendations for necessary repairs or adjustments
3. Repair braking system	3.1 Repair information is sourced and interpreted 3.2 Repair options are analysed and those most appropriate to the circumstances are selected 3.3 Repair tools, equipment and materials are selected and checked 3.4 Repairs and component replacements and adjustments are carried out according to manufacturer specifications, safety and environmental requirements, and without causing damage to components or system 3.5 Post-repair testing is carried out according to workplace procedures to confirm fault rectification, and any further problems detected as having been introduced during the repair process are rectified
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked 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 hydraulic braking system information efficiently.
Reading skills to:	interpret information from manufacturer and workshop literature when seeking hydraulic braking system specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting diagnostic findings, making repair recommendations, and recording parts and material used.
Oral communication skills to:	- clarify instructions - report diagnostic findings and make repair recommendations.
Numeracy skills to:	measure braking system components and use basic mathematical operations, including addition and subtraction, to calculate distances, tolerances and deviations from manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	use hydraulic braking system measuring equipment, such as vernier calipers, micrometers and brake drum micrometers.

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>Safety and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - lifting and supporting light vehicles - handling and controlling brake dust and brake fluids - environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems.
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Unit Mapping Information

Equivalent to AURLTB3003 Diagnose and repair light vehicle hydraulic braking systems

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 AURLTB003 Diagnose and repair light vehicle hydraulic braking systems

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- diagnose and repair a fault in:
 - two different light vehicle four-wheel disc hydraulic braking systems, in which the work must involve removing and refitting or replacing the brake calipers, disc pads and disc rotors
 - one light vehicle drum braking system, in which the work must involve removing and refitting or replacing brake drums, brake shoes and wheel cylinders
 - one light vehicle brake master cylinder, in which the work must involve removing and refitting or replacing the brake master cylinder.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing light vehicle hydraulic braking systems, including procedures for:
 - lifting and supporting light vehicles
 - handling and controlling brake dust and brake fluids
- environmental requirements, including procedures for trapping, storing and disposing of brake dust and brake fluid released from hydraulic braking systems
- operating principles of light vehicle hydraulic braking systems and associated components, including:
 - levers
 - friction
 - hydraulics, including the relationship between force, pressure and area

- properties of brake fluids, including:
 - Department of Transportation (DOT) classification
 - synthetic and non-synthetic
 - compatibility of fluid types
- application, purpose and operation of light vehicle hydraulic braking systems and components, including:
 - front and rear split systems
 - diagonal split systems
 - master cylinders, including:
 - tandem master cylinders
 - compensating-type master cylinders
 - centre-valve master cylinders
 - drum braking system and components, including:
 - self-energising or servo effect
 - leading and trailing shoe braking systems
 - duo-servo braking systems
 - two-leading shoe braking systems
 - wheel cylinders
 - manual and self-adjustment systems of drum braking systems
 - disc braking systems and components, including:
 - types of brake discs
 - disc pads
 - self-adjustment of disc pads
 - fixed, floating and dual-piston brake calipers
 - parking brake systems and components, including:
 - parking brake levers
 - drum parking brakes
 - disc parking brakes
 - electronic parking brake systems
 - braking system valves and switches, including:
 - pressure differential valves and switches
 - proportioning valves
 - load-sensing proportioning valves
 - drum brake check valves
 - fluid-level warning devices
 - vacuum operated brake boosting systems
- diagnostic testing procedures for light vehicle hydraulic braking systems, including procedures for:
 - checking brake pedal
 - operational tests of brake booster

- operational tests of master cylinder
- testing brake fluid
- operational tests of hand brake
- operational tests of drum and disc brakes
- measuring and evaluating brake drums, shoes, discs and pads
- repair procedures for light vehicle hydraulic braking systems, including procedures for:
 - removing, replacing and adjusting hydraulic system components, including master cylinder, proportioning valves, switches, brake hoses and lines, disc calipers and wheel cylinders
 - removing, replacing and adjusting braking system components, including brake booster, master cylinder, hand brake lever and cables, brake shoes and drums, brake pads and brake discs
 - bleeding brakes, including anti-lock braking systems (ABS)
- post-repair testing procedures for light vehicle hydraulic braking systems, including procedures for road testing and bedding in brakes.

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 light vehicle hydraulic 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 light vehicles with four-wheel hydraulic disc brake systems with faults
- one light vehicle with a rear drum brake system
- diagnostic equipment for light vehicle hydraulic braking systems
- tools, equipment and materials appropriate for repairing light vehicle braking systems.

Links

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