



Australian Government

AURLTB103 Diagnose and repair light vehicle hydraulic 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 hydraulic braking systems of light 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 working in the automotive service and repair industry. The hydraulic braking systems include those in light vehicles, light commercial vehicles or outdoor power equipment.

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

Unit Sector

Mechanical Light Vehicle Technical - Brakes

Elements and Performance Criteria

ELEMENTS	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 light vehicle hydraulic 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

ELEMENTS	PERFORMANCE CRITERIA
	1.5 Identify tools and equipment required for testing strategy and establish serviceability according to workplace procedures
2. Diagnose light vehicle hydraulic 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 light vehicle hydraulic 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.

SKILL	DESCRIPTION
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors.
Numeracy	• Measures hydraulic 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 equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTB003 Diagnose and repair light vehicle hydraulic 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 AURLTB103 Diagnose and repair light vehicle hydraulic 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:
 - two different light vehicle four-wheel disc hydraulic braking systems, in which the work must involve removing and refitting or replacing the brake callipers, 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
- carry out diagnostic tests in each of the above tasks for at least one of the following faults:
 - worn brake pads
 - malfunctioning master cylinders
 - contaminated brake fluid.

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 light vehicle hydraulic braking systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair light vehicle hydraulic 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 light vehicle hydraulic braking systems, including procedures for:
 - lifting and supporting light vehicles
 - handling and controlling brake dust and brake fluids
- environmental requirements relating to diagnosing and repairing light vehicle hydraulic braking systems, 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, 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
- 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 callipers

- 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 callipers 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

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.

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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