



Australian Government

AURLTZ101 Diagnose and repair light vehicle emission control 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 emission control 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.

It applies to those working in the automotive service and repair industry. The emission control systems include those in light vehicles or light commercial vehicles.

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

Unit Sector

Mechanical Light Vehicle Technical – Emission and Exhaust

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 emission control 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 1.5 Identify tools and equipment required for testing strategy

ELEMENTS	PERFORMANCE CRITERIA
	and establish serviceability according to workplace procedures
2. Diagnose light vehicle emission control 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 emission control 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	• Interprets numeric information, including: • exhaust gas percentages • exhaust gas ratios.
Planning and organising	• Plans own work requirements • Prioritises actions to achieve required outcomes • Ensures tasks are completed within workplace timeframes.
Technology	• Uses precision measuring equipment.

Unit Mapping Information

Supersedes and is equivalent to AURLTZ001 Diagnose and repair light vehicle emission control 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 AURLTZ101 Diagnose and repair light vehicle emission control 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 the emission control systems of two different light vehicles, in which the work must involve:
 - at least one of the following systems:
 - positive crankcase ventilation system
 - evaporative control system
 - air injection system
 - at least one of the following systems:
 - exhaust emission control system
 - exhaust gas recirculation system
 - diesel engine particulate filter system
 - diesel engine selective catalytic reduction (SCR) system
- carry out a diagnostic test in the course of the above for at least one of the following faults:
 - malfunctioning valves
 - malfunctioning air pumps
 - leaking or contaminated components.

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 emission control systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation

- workplace procedures required to diagnose and repair light vehicle emission control 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 emission control systems, including procedures for working with vehicles that produce toxic emissions
- environmental requirements relating to diagnosing and repairing light vehicle emission control systems
- operating principles of light vehicle emission control systems and associated components, including:
 - combustion chemistry and combustion emissions
 - engine blow-by
 - fuel volatility
- purpose and operation of light vehicle emission control systems and components, including:
 - evaporative control systems, including:
 - fuel tank vapour space
 - charcoal canister
 - crankcase ventilation systems, including:
 - positive crankcase ventilation (PCV)
 - diesel engine crankcase ventilation systems
 - exhaust emission control systems, including:
 - reduction and oxidation catalytic converters
 - air injection systems
 - diesel engine particulate filter systems
 - diesel engine SCR systems
 - exhaust gas recirculation (EGR) systems
 - emission control through engine design, including:
 - combustion chamber design
 - valve overlap
 - variable valve timing
- diagnostic testing procedures for light vehicle emission control systems, including procedures for testing:
 - evaporative control system operation

- crankcase ventilation system operation
- catalytic converter operation
- air injection system operation
- diesel engine particulate filter system operation
- diesel engine SCR system operation
- exhaust gas analysis
- EGR system operation
- repair procedures for light vehicle emission control systems, including procedures for removing, replacing and adjusting them
- post-repair testing procedures for light vehicle emission control systems.

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 emission control 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 light vehicle emission control system specifications
- two different light vehicles with emission control systems specified in the performance evidence
- diagnostic equipment for petrol or diesel light vehicle emission control systems
- tools, equipment and materials appropriate for repairing petrol or diesel light vehicle emission control 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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