



Australian Government

AURTTL102 Diagnose and repair CNG fuel 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 compressed natural gas (CNG) fuel systems of vehicles or machinery. 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 CNG fuel systems include those in agricultural machinery, heavy commercial vehicles, light vehicles or mobile plant machinery.

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

Unit Sector

Mechanical Miscellaneous Technical – Alternative Fuels

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 CNG fuel 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 CNG fuel 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 CNG fuel 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, Australian Standards, workplace health and safety and environmental requirements 3.4 Carry out post-repair testing according to workplace procedures, Australian Standards, 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	• Interprets Australian standards relating to repairing CNG fuel systems • Organises and interprets technical information from workplace procedures, manufacturer procedures and manufacturer specifications
Oral communication	• Clarifies instructions • Obtains information from customers and supervisors
Numeracy	• Measures CNG fuel system components • Uses mathematical operations, including addition, subtraction, multiplication and division • Calculates distances, areas, volumes, tolerances and deviations 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 precision measuring equipment

Unit Mapping Information

Supersedes and is equivalent to AURTTL002 Diagnose and repair CNG fuel 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 AURTTL102 Diagnose and repair CNG fuel 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 at least two vehicles with different compressed natural gas (CNG) fuel 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:

- methods to locate and interpret information required to diagnose and repair CNG fuel systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
 - Australian Standard - AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- workplace procedures required to diagnose and repair CNG fuel 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 CNG fuel systems, including procedures for:
 - working with extremely cold and flammable gas
 - storing CNG

- environmental requirements relating to diagnosing and repairing CNG fuel systems, including procedures for preventing loss of gas to atmosphere
- purpose and operation of CNG fuel systems and components, including:
 - mixers
 - regulators
 - fuel lock-off valves
 - filters
 - tanks
 - control valves and switches
- diagnostic testing procedures for CNG fuel systems, including procedures for testing:
 - mixers
 - regulators
 - fuel lock-off valves
 - electronic control valves and switches
- repair procedures for CNG fuel systems, including procedures for removing, replacing and adjusting the systems
- post-repair testing procedures for CNG fuel 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 CNG fuel 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 vehicle CNG fuel system specifications
- AS/NZ 2739 Natural gas (NG) fuel systems for vehicle engines
- two vehicles with different CNG fuel systems with faults
- diagnostic equipment for CNG fuel systems, including exhaust gas analyser
- tools, equipment and materials appropriate for repairing CNG fuel 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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