



Australian Government

AURTTL003 Install CNG fuel systems

Release: 1

AURTTL003 Install CNG fuel systems

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to install compressed natural gas (CNG) fuel systems. It involves preparing for the task, selecting, installing, testing and adjusting the system for correct operation, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The CNG fuel systems include those of agricultural machinery, forklifts, heavy commercial vehicles, light vehicles or mobile plant machinery.

Licensing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.

Competency Field

Mechanical Miscellaneous

Unit Sector

Technical – Alternative Fuels

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 install CNG fuel system	1.1 Job requirements are determined from workplace instructions 1.2 CNG fuel system installation information is sourced and interpreted 1.3 Installation options are analysed and those most appropriate to

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	the circumstances are selected 1.4 Hazards associated with the work are identified and risks are managed 1.5 Tools, equipment and materials are selected and checked according to manufacturer specifications and workplace procedures
2. Carry out installation activities	2.1 CNG fuel system is checked for correct application and components are checked for damage 2.2 CNG fuel system components are installed according to workplace procedures, manufacturer specifications, safety and environmental requirements and AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines, and without causing damage to components or systems 2.3 Installed CNG fuel system is tested for correct operation and required adjustments are made according to manufacturer specifications, workplace procedures, safety requirements, and AS/NZS 2739
3. Complete work processes	3.1 Final inspection is made to ensure work is to workplace expectations and system is presented ready for use 3.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 3.3 Tools and equipment are checked and stored according to workplace procedures 3.4 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 information efficiently.
Reading skills to:	- interpret Australian standards relating to installing CNG fuel systems - interpret manufacturer and workshop literature when seeking

Skills	Description
	CNG system installation procedures and specifications.
Writing skills to:	legibly and accurately fill out workplace documentation when recording parts and material used.
Oral communication skills to:	clarify instructions.
Numeracy skills to:	- use basic mathematical operations, including addition and subtraction, to measure components and vehicle when calculating installation positions and material lengths - interpret gauges of testing equipment.
Digital literacy skills to:	navigate computer programs in testing equipment and scan tools while testing and adjusting fuel system.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Problem solving skills to:	determine most appropriate method of installing fuel system while meeting relevant Australian standards.
Technology skills to:	use specialist tooling, measuring equipment and computerised equipment.

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>CNG fuel system components</i> must include:	- fill valve and fill hose - fuel container and mounting - service line - vaporiser - regulator - safety lock-off devices - mixers or injectors - associated electrical and electronic system, including selector and safety switches - compliance plates.
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<i>Safety and environmental requirements</i> must include:	• work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for working with extremely cold and flammable gas • environmental requirements, including procedures for preventing loss of gas to atmosphere.
<i>Testing CNG fuel system</i> must include:	• system leak testing • exhaust gas analysis to ensure compliance with relevant emission control standards.

Unit Mapping Information

Equivalent to AURTTL3003 Install CNG fuel 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 AURTTL003 Install CNG fuel systems

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Release 1	AURTTL3003 Install CNG fuel systems

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:

- install one complete compressed natural gas (CNG) fuel system in a vehicle.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to installing CNG fuel systems, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- requirements of AS/NZS 2739 Natural gas (NG) fuel systems, including:
 - containers and fuel system components
 - fuel service lines and materials
 - fuel control equipment
- Australian standard inspection, testing and commissioning requirements
- CNG system adjustment procedures, including exhaust gas analysis
- Australian standard certification, compliance plate, and marking and label requirements.

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 CNG fuel systems that they have installed, 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
- AS/NZS 2739 Natural gas (NG) fuel systems for vehicle engines
- manufacturer vehicle CNG system specifications
- one vehicle requiring installation of a CNG fuel system
- CNG installation kit, including:
 - fill valve and fill hose
 - fuel container and mounting
 - service line
 - vaporiser
 - regulator
 - safety lock-off devices
 - mixers or injectors
 - associated electrical and electronic system, including selector and safety switches
 - compliance plates
- testing equipment for CNG fuel systems, including CNG fuel leak testing equipment, including exhaust gas analyser
- tools, equipment and materials appropriate for installing CNG fuel systems.

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