



Australian Government

AURTTL015 Develop and apply gas fuel system modifications

Release: 1

AURTTL015 Develop and apply gas fuel system modifications

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to develop, apply and validate significant modifications to existing gas fuel systems in order to vary or enhance performance. It involves identifying the modification requirement, developing the modification specifications, applying and testing the modification, and completing workplace processes and documentation.

Significant and non-routine modifications are those that require compliance with Australian Design Rules and Vehicle Safety Bulletins.

It applies to those working in the automotive service and repair industry. The gas 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. Identify and confirm the	1.1 Job requirements are determined from workplace instructions

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.
modification requirement	1.2 Reasons for the modification are identified and confirmed with appropriate persons 1.3 Modification options are identified and presented to appropriate persons according to workplace procedures 1.4 Hazards associated with the work are identified and risks are managed 1.5 Legal and safety impacts of the modification are considered, as required, according to regulatory requirements
2. Develop and validate the modification specification	2.1 Manufacturer benchmark specifications for the existing gas fuel system are sourced and interpreted 2.2 Criteria for selecting the modification method and evaluating the outcomes are identified and documented 2.3 Proposed modification method is identified, selected and evaluated from available options 2.4 Selected option, including material choices and processes, is developed in detail and progressively assessed against established criteria 2.5 Modification specification is documented according to workplace procedures
3. Apply and test the modification specification	3.1 Tools, test equipment and materials required to support the modification procedure are identified, selected and prepared for use 3.2 Selected modification method is carried out according to workplace procedures, and <i>safety and environmental requirements</i> 3.3 Post-modification testing is carried out according to workplace procedures to confirm modification outcomes are as intended, and any problems detected as having been introduced during the modification process are rectified 3.4 Test results and other diagnostic findings are verified, as required, by using reliable alternative or optional processes 3.5 Variations needed during the modification process or as a result of testing are incorporated into the modification specification 3.6 Information and detail relating to the modification are documented and provided to the appropriate parties according to regulatory and commercial obligations
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations 4.2 Work area is cleaned, waste and non-recyclable materials are

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	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 and evaluate appropriate sources of information.
Reading skills to:	- interpret the operating and testing procedures for gas fuel system testing equipment from workplace and manufacturer literature - research, organise and interpret technical information from manufacturer and workshop literature when seeking gas fuel system specifications and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation when reporting modification findings and recording parts and material used.
Oral communication skills to:	clarify instructions, gain information from supervisors, and report modification outcomes.
Numeracy skills to:	- measure gas fuel system components and use basic mathematical operations, including addition and subtraction, to calculate tolerances and deviations from manufacturer specifications - interpret precision measuring equipment and test equipment units and scales.
Planning and organising skills to:	plan own work requirements and prioritise and sequence actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	- use precision measuring equipment, such as micrometers and vernier calipers - use specialised testing 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>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.
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Unit Mapping Information

Equivalent to AURTTL5015 Develop and apply gas fuel system modifications

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 AURTTL015 Develop and apply gas fuel system modifications

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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:

- develop and apply the following significant and non-routine modifications on the gas fuel systems of two different vehicles or machinery:
 - adapt or modify gas fuel system to a significantly changed capability
 - adapt gas fuel system for different work conditions
 - modify or install a significant gas fuel system for a special purpose.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to developing and applying gas fuel system modifications, including procedures for working with extremely cold and flammable gas
- environmental requirements, including procedures for preventing loss of gas to atmosphere
- principles and processes involved in planning and implementing modifications to gas fuel systems
- types, functions, operation and limitations of gas fuel systems being modified, including:
 - liquefied petroleum gas (LPG)
 - compressed natural gas (CNG)
 - liquefied natural gas (LNG)
- types, functions, operation and limitations of diagnostic testing equipment required for gas fuel system modifications
- associated vehicle systems and their impact on gas fuel system operation

- requirements of Australian Design Rules (ADRs) and Vehicle Safety Bulletins (VSBs) relating to gas fuel system modifications
- procedures for documenting and reporting the modification specifications and outcomes.

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 gas fuel systems that they have modified, 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 gas fuel system specifications
- ADRs and Vehicle Safety Bulletins (VSBs) relating to gas fuel system modifications
- two different vehicles or machinery requiring gas fuel system modification n
- tools, equipment and materials appropriate for carrying out gas fuel system modifications.

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