



Australian Government

AURTTL3010 Install LPG, CNG and LNG electrical control equipment

Release 1

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Modification History

Release	Comment
Release 1	Replaces AURT304031A Install LPG/CNG electrical control equipment Performance Criteria, Range Statement and Critical Aspects of Evidence updated to reflect technologies and to include LNG technology

Unit Descriptor

Unit descriptor	<p>This unit describes the performance outcomes required to install Liquefied Petroleum Gas (LPG), Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) electrical control equipment. It involves identification and confirmation of work requirement, preparation for work, installation of LPG, CNG and LNG electrical control equipment, testing of installed equipment and completion of work finalisation processes, including clean-up and documentation.</p> <p>Licencing, legislative, regulatory or certification requirements may apply to this unit in some jurisdictions. Users are advised to check with the relevant regulatory authority.</p>
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Application of the Unit

Application of the unit	Work applies to the LPG, CNG and LNG electrical control equipment of light vehicles, heavy commercial vehicles, and vehicles in the mining, construction and agricultural environments.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare to install electrical control equipment	<p>1.1. Workplace instructions are used to determine <i>job requirements</i></p> <p>1.2. Workplace health and safety (WHS) requirements relating to LPG, CNG and LNG fuel systems are observed and applied throughout the work</p> <p>1.3. Procedures and information are sourced and interpreted</p> <p>1.4. Method options are analysed and those most appropriate to the circumstances are selected</p> <p>1.5. Appropriate tools and equipment are selected and prepared</p>
2. Carry out installation	<p>2.1. Installation is performed according to workplace procedures and manufacturer and component supplier specifications and without causing damage to components or systems</p> <p>2.2. Adjustments are made according to workplace procedures and manufacturer and component supplier specifications</p>
3. Conduct post-installation tests and analyse results	<p>3.1. Testing is carried out according to workplace procedures and manufacturer and component supplier specifications</p> <p>3.2. Test results are compared with manufacturer and component supplier specifications to indicate compliance or non-compliance</p> <p>3.3. Results are documented according to workplace procedures, including recommendations for necessary repairs or adjustments</p>
4. Clean up work area and finalise work processes	<p>4.1. Final inspection is made to ensure work is to workplace expectations and vehicle is presented ready for use</p> <p>4.2. Tools and equipment are checked and stored according to workplace expectations</p> <p>4.3. Workplace and installation documentation is processed according to workplace procedures</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to:
 - clarify workplace instructions and determine job requirements
 - gain information from appropriate persons and assistance as required
- initiative and enterprise to identify installation problems and to suggest possible solutions
- learning skills to:
 - identify sources of information, assistance and expert knowledge to expand knowledge, skills and understanding
- literacy skills to:
 - read and follow information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
 - obtain and record measurements
 - document repairs and parts required
- numeracy skills to:
 - apply accurate measurements and adjustments
 - interpret instruments, gauges and measuring equipment
- planning and organising skills to:
 - plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed on time
 - identify risk factors and take action to minimise risk
- problem-solving skills to:
 - recognise a workplace problem or a potential problem and take action
 - refer problems outside area of responsibility to appropriate person and suggest possible causes
 - seek information and assistance as required to solve problems
- self-management skills to:
 - select and use appropriate equipment, materials, processes and procedures
 - recognise limitations and seek timely advice
- teamwork skills to apply knowledge of own role to complete activities efficiently to support team activities and tasks
- technical skills to use workplace tools relating to the installation of LPG, CNG and LNG fuel system electrical control equipment, including the use of specialised tools and equipment
- technology skills to:
 - operate diagnostic and test equipment
 - use technology to collect, analyse and provide information.

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required knowledge

- WHS regulations, requirements, equipment and material, and personal safety requirements relating to installing LPG, CNG and LNG fuel system electrical control equipment
- dangers of working with gas systems
- operating principles of LPG/CNG/LNG control systems and their relationship to the individual gas system and other associated systems
- installation procedures for LPG/CNG/LNG electrical control equipment
- post-installation testing procedures for LPG/CNG/LNG electrical control equipment

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Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to workplace operations and satisfy all of the requirements of the performance criteria and required skills and knowledge.

A person who demonstrates competency in this unit must be able to:

- observe safety procedures and requirements
- select methods and techniques appropriate to the circumstances
- conduct the installation and testing of a range of LPG, CNG or LNG electrical control equipment according to workplace, manufacturer and component supplier requirements
- interpret and record test results
- present vehicle in a condition that complies with workplace requirements.

Context of, and specific resources for assessment

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects performance in a real workplace setting.

Assessment is to occur:

- using standard workplace practices and procedures
- following safety requirements
- applying environmental constraints.

Assessment is to comply with relevant:

- regulatory requirements
- Australian standards
- industry codes of practice.

The following resources must be made available for the assessment of this unit:

- workplace location or simulated workplace
- vehicles that require the fitment of gas system electrical control equipment
- material relevant to installing gas system electrical control equipment
- equipment, hand and power tools appropriate to installing gas

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, required Skills and Knowledge, the Range Statement and the Assessment Guidelines for the Training Package.

Overview of assessment

- system electrical control equipment
- specifications and workplace instructions.

Method of assessment

Assessment must satisfy the endorsed Assessment Guidelines of this Training Package.

Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with the application of required skills and knowledge.

Assessment methods must be by direct observation of tasks and include questioning on required skills and knowledge to ensure correct interpretation and application.

Competence in this unit may be assessed in conjunction with other units which together form part of a holistic work role.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate the needs of diverse clients.

Assessment processes and techniques must be culturally sensitive and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Workplace instructions may include:

- computer-generated instructions
- verbal instructions
- written instructions.

Job requirements may include:

- LPG, CNG and LNG fuel system electrical control equipment installation methods, processes and equipment

Workplace health and safety (WHS) requirements:

- are those prescribed under legislation, regulations, codes of practice, and workplace policies and procedures
- may include:
 - protective clothing and equipment
 - use of tools and equipment
 - handling of material
 - use of fire-fighting equipment
 - first aid equipment
- hazard control, including control of hazardous materials and toxic substances.

Procedures and information may include:

- verbal, written and graphical instructions
- signage
- work schedules, plans and specifications
- work bulletins or memos
- material safety data sheets (MSDS)
- diagrams or sketches
- safe work procedures relating to the installation of LPG, CNG and LNG fuel system electrical control equipment
- regulatory and legislative requirements relating to the automotive industry
- Australian Design Rules
- Engineer's design specifications and instructions
- organisational work specifications and requirements
- instructions issued by authorised workplace or external persons
- Australian standards
- vehicle service requirements and repair manuals.

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<i>Adjustments</i> may include:	<ul style="list-style-type: none"> • integrating the electrical control system into the existing wiring loom • changes to the wiring loom length and configuration • changes to the fuel system configuration • changes to the air intake system configuration.
<i>Tests</i> may include:	<ul style="list-style-type: none"> • testing for electrical continuity, resistance, shorts to ground, voltage drop • verifying correct operation of associated vehicle systems • gas leakage checks.

Unit Sector(s)

Unit sector	Mechanical Miscellaneous
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Co-requisite units

Not applicable.

Competency field

Competency field	Technical - Alternative fuels
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