



Australian Government

CPCPGS3047A Install LPG systems in marine craft

Release 1

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Modification History

Version	Comments
1	This version first released with CPC08 Construction, Plumbing and Services Training Package Version 8.

Unit Descriptor

This unit of competency specifies the outcomes required to determine the requirements for, and install and commission, gas detection systems and liquefied petroleum gas (LPG) systems with an operating pressure not exceeding 2.75kPa in marine craft.

Application of the Unit

Site location for work application may be a purpose-built workshop or customer's premises.

Licensing/Regulatory Information

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification requirements.

Pre-Requisites

CPCPCM2043 Carry out WHS requirements
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Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

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| 1 | Identify LPG system requirements. | 1.1 | Plans, specifications and any special instructions are obtained. |
| | | 1.2 | <i>Work health and safety</i> (WHS) and <i>environmental requirements</i> associated with installing and commissioning LPG and gas detection systems in marine craft are adhered to throughout the work. |
| | | 1.3 | <i>Quality assurance requirements</i> for company operations are identified and adhered to. |
| | | 1.4 | Gas load and design requirements are determined from plans, specifications, and job drawings or workplace instructions. |
| | | 1.5 | System capacity is calculated to ensure adequacy for the required load and compliance with relevant Australian standards and installation requirements. |
| | | 1.6 | Appropriate regulator and piping are identified in terms of size, connection sizes and capacity, according to relevant Australian standards and installation requirements. |
| | | 1.7 | Location of cylinders, appliances and piping set out is identified according to job requirements and in compliance with relevant Australian standards and installation requirements. |
| | | 1.8 | Quantity of piping, components and fittings is estimated in compliance with relevant Australian standards and installation requirements. |

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| 2 | Prepare for installation. | <p>2.1 Materials, equipment, appliances and cylinders are ordered and checked for compliance with docket and order form, and for acceptable condition.</p> <p>2.2 Appropriate tools and equipment for installing and commissioning LPG systems and gas detection in marine craft, including personal protective equipment, are identified and selected.</p> <p>2.3 Work is planned in conjunction with others involved in or affected by the work.</p> <p>2.4 Work area and materials are prepared to support efficient installation of the system.</p> <p>2.5 Sustainability principles and concepts are observed when preparing for and undertaking work process.</p> |
| 3 | Determine and install LPG systems. | <p>3.1 Cylinders, regulators, associated pipework, appliances and fixings are installed in compliance with manufacturer requirements, relevant Australian standards and installation requirements.</p> <p>3.2 Gas detection system requirements are determined and installed according to relevant Australian standards and manufacturer requirements.</p> <p>3.3 Low voltage wiring is installed according to manufacturer instructions.</p> <p>3.4 Ventilation requirements are determined and installed according to relevant Australian standards.</p> |
| 4 | Test and commission LPG and detection systems. | <p>4.1 Appropriate test equipment is selected.</p> <p>4.2 Systems are tested and commissioned according to relevant Australian standards and manufacturer requirements.</p> <p>4.3 Test data is recorded in format required by regulatory and installation requirements.</p> <p>4.4 Compliance plates and signage are located and fitted according to statutory and regulatory authorities' requirements, relevant Australian standards and</p> |

installation requirements.

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| 5 | Clean up. | 5.1 | Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification. |
| | | 5.2 | Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures. |
| | | 5.3 | Information is accessed and documentation completed according to statutory requirements. |

Required Skills and Knowledge

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

Required skills

- communication skills to:
 - access information
 - determine requirements
 - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
 - follow instructions
 - inform relevant authorities and supervisors of completion of job
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
 - complete workplace documentation
 - read and interpret:
 - documentation from a variety of sources
 - plans and specifications
 - record data in writing
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
 - plan and set out work
 - plan work with others
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to:
 - confirm that the gas detection system complies with Australian standards
 - determine requirements, and install and commission LPG systems
- technology skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology

Required knowledge

- requirements and procedures relating to electrical safety and requisite precautions
- procedures for accessing relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements (SWMS)
- process for determining material requirements
- procedures for installing and commissioning gas systems in marine craft
- properties of gas, gas safety, combustion principles, gas pressures, cylinder installation, ventilation and gas detection requirements
- relevant statutory requirements relating to installing LPG systems in marine craft
- SI system of measurements
- workplace and equipment safety requirements

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment This unit of competency could be assessed in the workplace or a close simulation of the workplace environment providing that simulated or project-based assessment techniques fully replicate plumbing and services workplace conditions, materials, activities, responsibilities and procedures.

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

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

- locating, interpreting and applying relevant information, standards and specifications to determine requirements, and install and commission LPG systems in marine craft
- applying safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- given the plans and specifications for a project, determining the requirements for, installing, testing and commissioning LPG and gas-detection systems in a marine craft by determining the gas load, storage capacity and ventilation requirements for a gas appliance, ensuring:
 - application of sustainability principles and concepts when installing the LPG systems
 - correct identification of location, design and details of proposed installation
 - correct selection and use of appropriate processes, tools and equipment
 - completion of all work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
 - communicating and working effectively and safely with others.

Context of and specific resources for assessment

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' requirements.

Resource implications for assessment include:

- an induction procedure and requirement

- realistic tasks or simulated tasks covering the minimum task requirements
- relevant specifications and work instructions
- tools and equipment appropriate to applying safe work practices
- support materials appropriate to activity
- workplace instructions relating to safe work practices and addressing hazards and emergencies
- material safety data sheets
- research resources, including industry-related systems information.

Reasonable adjustments for people with disabilities must be made to assessment processes where required. This could include access to modified equipment and other physical resources, and the provision of appropriate assessment support.

Method of assessment

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and Services Integrated Framework Training Package
- include direct observation of tasks in real or simulated work conditions, with questioning to confirm the ability to consistently identify and correctly interpret the essential underpinning knowledge required for practical application
- reinforce the integration of employability skills with workplace tasks and job roles
- confirm that competency is verified and able to be transferred to other circumstances and environments.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

Assessment processes and techniques should as far as is practical take into account the language, literacy and numeracy capacity of

the candidate in relation to the competency being assessed.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

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, if used 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.

Work health and safety

is to be according to commonwealth, state and territory legislation and regulations and may include:

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- safe operating procedures, including recognising and preventing hazards associated with:
 - confined spaces
 - electricity
 - hazardous materials and substances
 - service lines
 - surrounding structures and facilities
 - trip hazards
 - use of tools and equipment
 - work site visitors and the public
 - working at heights
 - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.
- clean-up protection
- waste management.

Environmental requirements may include:

Quality assurance requirements may include:

- Australian standards
- environment policy
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy

- International Standards Organisation
 - site safety plan
 - workplace operations and procedures.
- Materials:**
- may include:
 - copper tubing
 - fittings
 - fixing materials
 - flue systems
 - gas cylinders
 - gas detection system
 - gas-operated appliances
 - gas regulators
 - gas hose assemblies
 - other approved materials
 - are to comply with job specifications and appropriate standards for gas installations.
- Tools and equipment**
may include:
- files
 - flaring tools
 - hacksaws
 - hand trolleys
 - hoists and jacks
 - lifting and load shifting equipment
 - measuring equipment
 - power cutting tools
 - pressure testing equipment
 - silver brazing equipment
 - spanners
 - wrenches.
- LPG system may**
include:
- approved appliances
 - cylinders
 - flue systems
 - piping
 - regulators
 - ventilation.
- Gas detection system**
must include:
- gas detection unit
 - low voltage wiring (to a limit of 32 volts)
 - sensors
 - solenoid valve
 - power supply.
- Sustainability principles**
- cover the social, economic and environmental use of resources to meet current and future needs

and concepts:

- may include:
 - selecting appropriate materials
 - efficient use and recycling of material
 - using energy efficient appliances
 - disposing of waste material appropriately.

Statutory and regulatory authorities may include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

Information may include:

- charts and hand drawings
- plans and sketches
- instructions issued by authorised organisational or external personnel
- job drawings
- manufacturer specifications and instructions
- material safety data sheets (MSDS)
- memos
- organisation work specifications and requirements
- recognised formulas or tables accepted by the regulatory authority
- regulatory and legislative requirements, particularly those pertaining to:
 - WHS and environmental requirements
 - plumbing and/or gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to determining requirements, and installing and commissioning LPG and gas detection systems in marine craft
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)**Competency field**

Gas services

Unit sector

Plumbing and services

Custom Content Section

Not applicable.