Australian Government

Department of Education, Employment and Workplace Relations

CPCPGS3031A Install gas piping systems

Release: 1

CPCPGS3031A Install gas piping systems

Modification History

Not applicable.

Unit Descriptor

Unit descriptor This unit of competency specifies the outcomes required to select, install and test gas consumer piping carrying natural gas (NG), liquefied petroleum gas (LPG), or tempered liquefied petroleum gas (TLPG) up to 200kPa.

Application of the Unit

Application of the unit Site location for work application may be a customer's premises.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCPCM2023A	Carry out OHS requirements

Employability Skills Information

Employability skills 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

ELEMENT	PERFORMANCE CRITERIA
1. Identify gas piping system requirements.	1.1. Building plans and specifications and any special instructions are obtained. 1.2. ***Safety*** (***OHS***) requirements associated with the installation of gas piping systems, and workplace ***environmental requirements***, are adhered to throughout the work. 1.3. ***Quality assurance*** requirements for company operations are identified and adhered to. 1.4. Gas load and design requirements are determined from design drawing or given information. 1.5. Size of piping is calculated in accordance with relevant Australian standards, authorities' and workplace requirements. 1.6. Set out of piping systems is in accordance with design drawing or instruction and complies with relevant Australian standards, authorities' and workplace requirements. 1.7. Quantity and type of materials to conform to appropriate relevant Australian standards are estimated from design drawings or on-site dimensions.
2. Prepare for installation.	2.1. ***Materials*** and equipment are ordered and checked for compliance with docket and order form, and for acceptable condition. 2.2. Appropriate ***tools and equipment*** for piping system installation, including personal protective equipment, are identified, selected and checked for serviceability. 2.3. Appropriate testing equipment is selected. 2.4. Work is planned in conjunction with others involved in or affected by the work. 2.5. Work area and materials are prepared to support efficient installation of the system.
3. Install and test piping system.	3.1. Support system and installation method, including fixings, are selected to comply with manufacturer instructions, relevant Australian standards and workplace requirements. 3.2. Pipe system is installed and jointed in accordance with design drawing or instruction and complies with relevant Australian standards and workplace requirements.

ELEMENT	PERFORMANCE CRITERIA
	3.3. System is tested in accordance with job requirements, relevant Australian standards and workplace requirements. 3.4. Leaks are located and repaired and system is retested. 3.5. ***Sustainability principles and concepts*** are applied throughout the installation. 3.6. System is purged of air in accordance with relevant Australian standards. 3.7. Test data is recorded in format required by regulating authority and workplace requirements.
4. Clean up.	4.1. Work area is cleared and materials disposed of, reused or recycled in accordance with legislation, regulations, codes of practice and job specifications. 4.2. Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturer recommendations and workplace procedures. 4.3. ***Information*** is accessed and documentation completed in accordance with regulatory and workplace requirements.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills for this unit are:

- communication skills to:
  - access information
  - complete workplace documentation
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - plan work with others
  - read and interpret:

REQUIRED SKILLS AND KNOWLEDGE

    - documentation from a variety of sources
    - drawings and specifications
  - record test data in writing
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- determining pipe requirements and installing and testing gas piping systems where the installation conforms to relevant Australian standards or requirements of the local regulatory authority
- identifying and accurately reporting to appropriate personnel any faults in tools, equipment or materials
- numeracy skills to apply measurements and calculations
- organisational skills, including the ability to plan and set out work
- 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
- technological skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology.

Required knowledge

Required knowledge for this unit is:

- characteristics of piping materials, joining methods, fittings and sealants
- electrical safety and requisite precautions
- how to access relevant information, including codes and technical standards
- job safety analysis (JSA) and safe work method statements(SWMS)
- material requirements determination process
- procedures for installing and testing gas piping systems, including brazing and mechanical pipe jointing
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory and authority requirements related to installing and testing gas piping systems
- SI system of measurements
- workplace and equipment safety requirements.

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, 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, Australian standards and specifications to determine requirements, and installing and testing consumer gas piping systems
- applying safety requirements throughout the work sequence, including electrical requirements and the use of personal protective clothing and equipment
- as a minimum the ability to, given the plans and specifications, determine the requirements, install and test two gas piping systems, each comprising at least two materials and serving two Type A gas appliances; one being an NG pipeline from the outlet of a meter and the other being an LPG pipeline from a storage cylinder or tank, ensuring:
  - application of sustainability principles and concepts throughout
  - correct identification of design and details of proposed piping system
  - correct selection and use of appropriate processes, tools and equipment
  - completing all work to specification
  - compliance with regulations, relevant Australian standards and organisational quality procedures and processes
  - communicating and working effectively

EVIDENCE GUIDE

	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 working 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 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

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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

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.

Safety (***OHS***) is to be in

- handling of materials

RANGE STATEMENT

accordance with commonwealth, state and territory legislation and regulations and may include:	• hazard control
	• identification and testing for electrical hazards
	• personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
	• safe operating procedures, including recognising and preventing hazards associated with:
	  • electricity
	  • hazardous materials and substances
	  • service lines
	  • surrounding structures and facilities
	  • trip hazards
	  • use of installation 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.

Environmental requirements may include:	• clean-up protection • waste management.
Quality assurance requirements may include:	• Australian standards • Environment Protection Authority (EPA) • environment policy • internal company quality assurance policy and risk management strategy • International Standards Organisation • site safety plan • workplace operations and procedures.
Materials may include:	• acceptable fittings and joints • copper • corrosion control materials • mechanical jointed steel • polyethylene (PE) and composite pipes • unplasticised polyvinyl chloride (PVC-U) • other approved materials.
Tools and equipment may	• chain blocks

RANGE STATEMENT

include:	• crimpers • flaring tools and silver brazing equipment • hacksaws • hand and power tools • hand trolleys • hoists and jacks • lifting and load shifting equipment and ladders • measuring equipment • oxy and arc welding equipment • pipe benders • rollers • spanners • test instruments • testing equipment • threading equipment • wrenches.

Sustainability principles and concepts:	• Cover the current and future social, economic and environmental use of resources
	• may include:
	  • appropriate component selection that has minimal environmental impact
	  • choice of energy and water efficient appliances
	  • efficient use and recycling of material
	  • correct handling of hazardous materials
	  • disposal of waste material to ensure minimal environmental impact.

Information may include:	• charts and hand drawings • diagrams or 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:

RANGE STATEMENT

- building codes
- OHS and environmental requirements
- plumbing and gasfitting authority regulations
- relevant Australian standards
- safe work procedures relating to installing and testing gas piping systems
- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Unit sector Plumbing and services

Co-requisite units

Co-requisite units Nil

Functional area

Functional area