



Australian Government

CPCPGS3054A Calculate and install natural ventilation for Type A gas appliances

Release 1

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Modification History

Prerequisite unit updated

Changes to descriptor, performance criteria, required skills and knowledge, range statement and critical aspects

Not equivalent to CPCPGS3024A

Unit Descriptor

This unit of competency specifies the outcomes required to calculate and install natural ventilation for Type A gas appliances operating on natural gas (NG), liquefied petroleum gas (LPG) or tempered liquefied petroleum gas (TLPG) not exceeding 200kPa.

Application of the Unit

Site location for work application may be either domestic or commercial, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

Licensing/Regulatory Information

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

Pre-Requisites

CPCPCM2043A Carry out WHS requirements

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 | Prepare for work. | 1.1 | Design drawings, specifications and any special instructions are obtained. |
| | | 1.2 | <i>Work health and safety</i> (WHS) and <i>environmental requirements</i> associated with calculating and installing natural <i>ventilation</i> for Type A gas appliances are adhered to throughout the work. |
| | | 1.3 | <i>Quality assurance requirements</i> for company operations are identified and adhered to. |
| | | 1.4 | Appropriate work notices and required documentation are completed and dispatched according to authorities' requirements. |
| | | 1.5 | Tasks are planned in conjunction with others involved in or affected by the work. |
| | | 1.6 | <i>Tools and equipment</i> , including personal protective equipment, are selected and checked for serviceability. |
| | | 1.7 | Work area is prepared to support efficient calculation and installation of natural ventilation for Type A gas appliances. |

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|---|--|-----|--|
| 2 | Identify natural ventilation requirements. | 2.1 | Gas load and design requirements are determined from design drawings, plans, specifications and given information. |
| | | 2.2 | Source and path of air supply are determined to comply with standards, plans and specifications of the job. |
| | | 2.3 | Free ventilation area is calculated in required format and confirmed as being according to standards, plans and specifications. |
| | | 2.4 | Ventilation openings are calculated in required format and positioned in compliance with standards. |
| | | 2.5 | Quantity and type of materials and other components required are estimated from design drawing or on-site dimensions and ordered according to workplace requirements. |
| | | | |
| 3 | Install ventilation and test appliance. | 3.1 | Ventilation is installed in compliance with building codes and standards without damage to the building structure, surrounding environment or other services. |
| | | 3.2 | Appliance and flues are tested and adjusted where necessary for operation and compliance with standards. |
| | | 3.3 | Sustainability principles and concepts are applied throughout the installation. |
| | | | |
| 4 | Clean up. | 4.1 | Work area is cleared and materials disposed of, reused or recycled according to legislation, regulation, codes of practice and job specification. |
| | | 4.2 | Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures. |
| | | 4.3 | Information is accessed and documentation completed according to workplace requirements. |

Required Skills and Knowledge

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

Required skills

- calculating, installing and testing natural ventilation for Type A gas appliances
- 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
- technology skills to:
 - access and understand site-specific instructions in a variety of media
 - use mobile communication technology

Required knowledge

- 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)

- mechanical ventilation and associated interlocks
- procedures for calculating, installing and testing natural ventilation for Type A gas appliances
- properties of gas, gas safety, combustion principles, pressure and flow rates
- relevant statutory requirements related to natural ventilation requirements for Type A gas appliances
- 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 for calculating, installing and testing natural ventilation for Type A gas appliances
- 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, calculating and installing natural ventilation for a minimum of three different Type A gas appliances, ensuring:
 - application of sustainability principles and concepts
 - correct identification of location, design and details of proposed installations
 - correct selection and use of appropriate

processes, tools and equipment

- completing 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 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

- handling of materials
- hazard control
- personal protective clothing and equipment

regulations and may include:

- 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 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.

Ventilation:

- may be natural or mechanical
- may be required for:
 - type one decorative gas log fire
 - type two decorative gas log fire
 - ducted heating systems
 - gas stoves and hot plates
 - storage water heaters
 - continuous flow water heaters
 - space heaters.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA)
- internal company quality assurance policy and risk management strategy
- International Standards Organisation
- National Construction Code
- site safety plan
- workplace operations and procedures.

Tools and equipment may include:

- grinders
- hand and power tools
- ladders
- measuring equipment
- restricted height scaffolding
- test equipment and instruments.

Materials:

- are to comply with appropriate standards for installing ventilation for Type A gas appliances
- include Type A gas appliances and ventilation materials, including grills
- may include louvres and ducting.

Sustainability principles and concepts:

- cover the current and future social, economic and environmental use of resources
- may include:
 - selecting appropriate material to ensure minimal environmental impact
 - efficient use of material
 - efficient energy usage
 - considering energy efficiency requirements.

Information may include:

- charts and hand drawings
- 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
- plans and sketches
- regulatory and legislative requirements, particularly those pertaining to:
 - building codes
 - WHS and environmental requirements
 - plumbing and/or gasfitting authority regulations
- recognised formulas or tables accepted by the regulatory authority
- relevant Australian standards
- safe work procedures relating to calculating and installing natural ventilation for Type A gas

appliances

- signage
- verbal, written and graphical instructions
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Functional area

Unit sector Plumbing and services

Custom Content Section

Not applicable.