

Unit of Competency CPCPGS4023

Install, commission and service

Type B gas appliances

Application

This unit specifies the skills and knowledge required to install, commission and service Type B gas appliances, from the gas isolation valve and electrical isolation switch to the flue spigot on the appliance.

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

Prerequisite Unit

CPCPCM2043 Carry out WHS requirements

UEENEEP012A Disconnect / reconnect composite appliances connected to low voltage installation wiring

Elements and Performance Criteria

1. Obtain authority to undertake work on Type B gas appliances.	<ul style="list-style-type: none">1.1 Conduct a detailed site inspection to assess, analyse, interpret and confirm design specification.1.2 Liaise with designer and gas authorities to clarify and resolve identified design specification matters.1.3 Obtain formal authority to proceed with installation and commissioning before commencing work.
2. Prepare for work.	<ul style="list-style-type: none">2.1 Access, read and determine installation, commissioning and service requirements from job specifications, relevant Australian Standards, codes, manufacturer's specifications and jurisdictional requirements.2.2 Identify and apply workplace policies and procedures, work health and safety (WHS) and environmental requirements.2.3 Conduct gas system and electrical safety checks and isolation procedures and record to manufacturer and other authorities' requirements before commencing work.2.4 Select appropriate tools and equipment, including personal protective equipment (PPE).
3. Obtain materials and install Type B gas appliances.	<ul style="list-style-type: none">3.1 Identify and obtain gas system components, electrical or electronic components and controls and other required installation materials from the job specifications, relevant Australian Standards, codes, manufacturer's specifications and jurisdictional requirements.3.2 Obtain component specifications and manufacturers' installation and servicing manuals.3.3 Perform installation of appliance components, including valve trains, burners and associated pipework and flue systems.3.4 Calculate and identify ventilation systems.3.5 Check suitability of electrical components, including terminations and electrical wiring and wiring enclosures.3.6 Visually inspect installations at each stage of work to ensure compliance with

	specifications and absence of damaged or faulty equipment and materials.
4. Commission and test Type B gas appliances.	<p>4.1 Select testing and servicing equipment appropriate to the requirement and check and prepare for use.</p> <p>4.2 Conduct gas and electrical safety checks and isolation procedures, including purging, and record as required before testing and commissioning is commenced.</p> <p>4.3 Perform test operational parameters of individual components and adjust to conform to specifications.</p> <p>4.4 Perform test appliance operations with and without fuel and adjust as necessary and record results.</p> <p>4.5 Set air flow rate and gas rate in accordance with relevant standards.</p> <p>4.6 Analyse flue gases according to recognised industry practice.</p> <p>4.7 Perform test operations of critical safety interlocks to ensure they are operational and set points are as per relevant standards.</p>
5. Service Type B gas appliances.	<p>5.1 Analyse defect reports or operational records to identify the nature and possible cause of faults or out-of-specification performance.</p> <p>5.2 Conduct electrical and gas safety checks and isolation procedures and record before servicing work is commenced.</p> <p>5.3 Read and correctly interpret plans and diagrams to identify potential gas system and electrical fault pathways and locations.</p> <p>5.4 Select and apply appropriate testing techniques, procedures and equipment to diagnose system faults or discrepancies.</p> <p>5.5 Identify and confirm cause of fault or out-of-specification performance.</p> <p>5.6 Analyse options for correction and select the most appropriate corrective action.</p> <p>5.7 Conduct repair, replacement or adjustment according to manufacturer specifications or service manuals.</p> <p>5.8 Test to ensure critical safety interlocks are operational and set points are as per relevant standard.</p> <p>5.9 Assess appliance to ensure compliance with relevant standards and manufacturer specifications prior to recommissioning and returning to service.</p>
6. Finalise work.	<p>6.1 Clear the work area, and dispose of, reuse or recycle materials in accordance with state and territory legislation and workplace policies and procedures.</p> <p>6.2 Clean tools and equipment, check for serviceability and report any damage, and store and secure</p> <p>6.3 Complete documentation according to workplace requirements.</p>

Foundation skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is non-equivalent to CPCPGS4023B Install, commission and service Type B gas appliances.

Links

Companion Volume Implementation Guide:

<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCPGS4023 Install, commission and service Type B gas appliances

Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria for this unit by:

- planning, installing, commissioning and maintaining one Type B gas appliance.

In doing so the person must:

- complete all work according to approved design specifications, workplace procedures, standards, codes and regulatory and manufacturer requirements within agreed timeframes
- apply safety requirements throughout the work sequence.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- relevant standards:
 - AS 3814 Industrial and commercial gas-fired appliances
 - AS/NZS 5601 Gas installations set
 - AS1375 Industrial fuel fired appliances
 - AS 2593 Boilers - Safety management and supervision systems
 - AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)
 - AS/NZS 4836 Safe working on low-voltage electrical installations
- flue gas analysis techniques and processes
- gas terminology and conventional symbols
- gas safety and isolation procedures
- combustion characteristics and effects
- purging requirements, techniques and critical calculation processes
- types, characteristics, uses and limitations of Type B gas appliance components
- ventilation techniques and calculation processes
- workplace and equipment safety requirements
- design specification:
 - o air controls
 - o combustion air blowers
 - o flame safeguards
 - o gas pressure regulation
 - o gas valve trains
 - o manual shut-off valves
 - o markings and instructions
 - o materials

- o over-pressure protection systems
 - o process controls
 - o safety shut-off valve systems
- Type B gas appliances:
 - o those above 10 megajoules (MJ) for which a certification scheme does not exist
 - o gas types:
 - combination fuels
 - liquefied petroleum gas (LPG)
 - natural gas (NG)
 - tempered LPG
 - bio-gas
 - o special requirements for design and operation:
 - o after burners - process
 - o air gas mixing machines and mixing blowers
 - o atmosphere generators and special atmospheres
 - o direct gas fired air heaters
 - o high input gas fired appliances
 - o incinerators and generators
 - o multi-fuel firing systems
 - o ovens - direct fired
 - o smoke ovens - direct fired
 - o stationary gas engines and turbines
 - o steam and heated water boilers
 - o water heaters
- Type B appliance operation specifications:
 - o flame establishment periods
 - o interlocks
 - o operation of gas appliance and burners
 - o operational sequences
 - o pre-purging
 - o start gas rates
- determination of site suitability for installation
- commissioning procedure for a Type B appliance in accordance with relevant standard
- types of valve trains
- types of burners:
 - o atmospheric
 - o nozzle mix
 - o package
 - o pre-mix
- testing and servicing of Type B gas appliances requirements
- how to access relevant information, including codes and standards
- tools, materials and equipment used to install, commission and service Type B gas appliances

- work health and safety (WHS) requirements for installing, commissioning and servicing Type B gas appliances
- properties of gas, gas safety, combustion principles, pressure and flow rates.

Assessment Conditions

Assessors must satisfy the requirements for assessors listed in the Standards for Registered Training Organisations.

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

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