



Australian Government

Department of Education, Employment and Workplace Relations

CPPFES3045A Install gaseous agent containers and actuators

Release: 1

CPPFES3045A Install gaseous agent containers and actuators

Modification History

Revised unit

Unit updated and equivalent to PRMPFES45A Install gaseous agent containers and actuators

Unit Descriptor

This unit of competency specifies the outcomes required to receive and install gaseous agent containers, manifold connections, actuators and activating mechanisms.

Application of the Unit

This unit of competency supports fire protection technicians responsible for receipt and installation procedures involving gaseous agent containers and actuators.

Licensing/Regulatory Information

Work in this area must be completed according to relevant legislative, industry, finalised design documentation and installation drawings, and customer and organisational requirements, including policies and procedures relating to ozone depleting substances (ODS), synthetic greenhouse gases (SGG) and occupational health and safety (OHS). Service technicians are not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state and territory regulations).

The unit supports one or more extinguishing agent handling licences (EAHL) prescribed under the Ozone Protection and Synthetic Greenhouse Gas Management Act 1989.

Different states and territories may have regulatory mechanisms that apply to this unit.

Candidates are advised to check for regulatory limitations.

Pre-Requisites

Not applicable.

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

1	Apply rules and regulations to installation operations.	1.1	Requirements of relevant <i>rules and regulations</i> are <i>confirmed</i> and applied to <i>work procedures</i> .
		1.2	<i>Compliance requirements are checked</i> and <i>action</i> is taken according to <i>ODS, SGG</i> requirements and <i>organisational policies and procedures</i> .
2	Receive system components.	2.1	Procurement details and specifications of <i>system components and materials</i> are checked against <i>finalised design documentation</i> and <i>installation drawings</i> .
		2.2	<i>Pre-tested or prefabricated components</i> are checked to ensure they have correct documentation identifying compliance with Australian standards.
		2.3	Components and materials are checked to confirm that they are in <i>acceptable condition</i> and meet quality control checks.
		2.4	Labour, <i>tools, equipment and materials</i> , and <i>hardware components</i> are assembled at work site.
3	Prepare for installation of gaseous agent containers and actuators.	3.1	<i>Work permits</i> are organised prior to entering customer premises.
		3.2	<i>Safety procedures</i> are followed according to organisational, manufacturer and <i>customer requirements</i> .
		3.3	Potential <i>hazards</i> and risks are identified.
		3.4	Required tools, equipment and materials are identified, selected and checked, and used safely and efficiently.

- 3.5 Cylinders are checked to ensure that they contain correct quantity of extinguishing agent according to specifications in installation documentation.
 - 3.6 Installation site is confirmed as appropriate with relevant persons and on finalised design documentation and installation drawings.
 - 3.7 Safety measures are confirmed to be in place prior to the installation process.
- 4 Install gaseous agent containers and actuators.
- 4.1 Support systems, components and fittings are fixed according to finalised design documentation and installation drawings.
 - 4.2 Containers are supported correctly and support frame is fixed according to installation drawings.
 - 4.3 Container manifold and connection components are installed.
 - 4.4 Transport caps, discharge outlet and actuator plugs or caps and locking devices are removed according to manufacturer and organisational requirements.
 - 4.5 Flexible hose connections are physically checked for tightness and absence of kinks.
 - 4.6 Actuators are checked to ensure that they are in reset position prior to installation according to manufacturers' requirements.
 - 4.7 Manual and pneumatic *actuators*, pilot and slave tubes and fittings are safely installed.
 - 4.8 ***Auxiliary shutdown fire system and equipment*** interface and alarm device connections are installed.
 - 4.9 Pilot and slave tube connections are checked for tightness and absence of kinks.
 - 4.10 Actuators are set to operate.

- 5 Complete installation.
 - 5.1 Installation site is left clean and tidy with materials disposed of or recycled according to state or territory legislative and industry requirements.
 - 5.2 **Documentation** is completed according to work procedures.

Required Skills and Knowledge

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

Required skills

- initiative and enterprise skills to apply quality control requirements when accepting received system components and materials
- customer service skills
- language, literacy and numeracy skills to:
 - check procurement details of received gaseous agent containers and actuators
 - communicate with others clearly and concisely, verbally and in writing
 - convert basic units of measurement and pressure
 - read and comply with work instructions and specifications
 - read and record measurements
 - record and report information neatly and legibly
- planning and organising skills to allow time to complete activities and prioritise tasks
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- skills to work safely when:
 - applying workplace housekeeping procedures
 - removing debris caused by installation operations in the work area
 - selecting and using equipment and materials for specific tasks
 - using power tools, for example when holding work
- technical skills to:
 - interpret finalised design documentation and installation drawings
 - identify hazards in the work area in preparation for installation operations
 - remove transport caps according to manufacturer and organisational requirements
 - install manual and pneumatic actuators, pilot and slave tubes and fittings
 - install system and components to match requirements of installation drawings
 - check pilot and slave tube connections are free from kinks and check for tightness
 - use detection equipment to find hidden utilities

Required knowledge

- action to take when a breach of OHS, ODS and SGG or other policy occurs
- awareness of on-site work permit requirements
- intent of Australian standard AS 1851 in relation to installation of gaseous agent containers and actuators
- key features of legislation, regulations and codes applicable to fire protection equipment installation procedures, including:
 - EAHL requirements

- implications of not applying legislative requirements to job functions
- purpose of the Building Code of Australia (BCA)
- records and documentation required to install gaseous agent containers and actuators
- relevant federal, state or territory legislation that affects organisational operations, including:
 - anti-discrimination and diversity
 - equal employment opportunity
- maintenance requirements for relevant hand and power tools
- operation of various activating mechanisms
- safety requirements for using tools, equipment and materials
- tool, equipment and material selection for installation procedures for gaseous agent containers and actuators
- types and purposes of relevant hardware items
- types of electrical safeguards used to protect persons and property

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 by observation of practical demonstration of the installation of gaseous agent containers and actuators in customers' premises or simulated workplace.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the required skills and knowledge specified in this unit.</p> <p>In particular the person should demonstrate the ability to:</p> <ul style="list-style-type: none"> • communicate and work effectively and safely with others • comply with organisational policies and procedures, including quality requirements • comply with site safety plan, OHS regulations and ODS and SGG regulations (where required) and state and territory legislation applicable to workplace operations • install gaseous agent containers and actuators in a minimum of two different settings, including: <ul style="list-style-type: none"> • identifying risk reduction measures • identifying, selecting and assembling hardware and components • identifying, selecting and using tools, equipment and materials effectively to perform installation procedures on gaseous agent containers and actuators • checking procurement details and specifications of gaseous agent containers, actuators and materials • applying quality control checks to gaseous agent containers, actuators and materials • adhering to safety procedures during installation procedures • installing system components, fittings, actuators, activating mechanisms and auxiliary shutdown interface as required by installation guidelines • completing workplace housekeeping requirements • creating records and documentation • locate, interpret and apply relevant information, standards and specifications.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context. It is to comply with relevant regulatory or Australian standards' requirements.

	<p>Resource implications for assessment include:</p> <ul style="list-style-type: none"> • actual or simulated work environment, including gaseous agent containers and actuators • finalised design documentation and installation drawings for a gaseous fire-suppression system • assessment documentation, including training and assessment record books • necessary tools, specialist equipment, materials and spare parts • relevant manuals and other documentation, including Australian standards.
Method of assessment	<p>Assessment methods must:</p> <ul style="list-style-type: none"> • satisfy the endorsed Assessment Guidelines of the Property 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.
Guidance information for assessment	<p>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.</p> <p>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.</p> <p>This unit could be assessed on its own or in combination with other units relevant to the job function.</p>

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.

<i>Rules and regulations</i> may include:	<ul style="list-style-type: none"> • building surveyor requirements • dangerous goods regulations
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	<ul style="list-style-type: none"> • environmental regulations, including ODS and SGG legislation, codes and regulations • licensing arrangements • OHS legislation, codes and regulations • relevant Australian and international standards, such as: <ul style="list-style-type: none"> • AS 4214 Gaseous fire extinguishing systems • ISO 14520 Gaseous fire-extinguishing systems – Physical properties and system design • NFPA 12 Standard on Carbon Dioxide Extinguishing Systems (US) • NFPA 12A Standard on Halon 1301 Fire Extinguishing Systems (US) • NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems (US) • note: Australian standards are frequently revised and users must always check for currency and amendments • relevant federal, state and territory building Acts, regulations and codes, such as: <ul style="list-style-type: none"> • Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 • BCA • other relevant legislation relating to fire protection equipment, including: <ul style="list-style-type: none"> • international shipping codes • marine codes for different Australian States.
Requirements may be <i>confirmed</i> with:	<ul style="list-style-type: none"> • colleagues • managers • supervisors • team leaders.
<i>Work procedures</i> may include:	<ul style="list-style-type: none"> • assignment instructions • equipment manufacturers' requirements • instructions from colleagues, supervisors and managers • ODS, SGG and OHS requirements • personal protective equipment (PPE) requirements • reporting and documentation requirements • specific customer requirements.
<i>Checking compliance requirements</i> may include:	<ul style="list-style-type: none"> • undertaking commissioning tests detailed in Australian standards and manufacturers' documentation to verify performance of an installed, repaired or altered piece of equipment or system • reviewing documentation to ensure containers and actuators have been installed correctly and according to the system design.
<i>Action</i> may include:	<ul style="list-style-type: none"> • advising customer

	<ul style="list-style-type: none"> • documenting non-compliance • making equipment safe • reporting, as required.
<p>ODS and SGG extinguishing agents may include:</p> <p>Note list format: product name (other names) use</p> <p>Check the latest amendments to the Ozone Protection and Synthetic Greenhouse Gas Management Act for the current list of ODS and SGG extinguishing agents.</p>	<ul style="list-style-type: none"> • ODS and SGG extinguishing agents commonly used in Australia: <ul style="list-style-type: none"> • FM200 (FE-227 Heptafluoropropane, HFC-227ea) used as a total flooding extinguishing agent and as a replacement for Halon 1301 • Halon 1211 (BCF, Halon 1211 BCF, Bromochlorodifluoromethane) used as a streaming agent – requires a special permit in Australia • Halon 1301 (BTM, Halon 1301 BTM, Bromotrifluoromethane) used as a total flooding agent – requires a special permit in Australia • NAF-P-III (HCFC Blend C) used as a streaming agent • NAF-P-IV (HCFC Blend E) used as a streaming agent • NAF-S-III (HCFC Blend A) used as a total flooding agent • SF6 (Sulfurhexafluoride) used as an inerting agent in sealed high voltage switchgear • ODS and SGG extinguishing agents not commonly used in Australia: <ul style="list-style-type: none"> • Blitz III (HCFC Blend D) used in flooding systems • CFC-11 (Trichlorofluoromethane) may be found as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • FC-2-1-8 (CEA-308) used in flooding systems • FC-3-1-10 (CEA-410) used in flooding systems • FC-5-1-14 (CEA-614) used as a streaming agent • FE-13 (Trifluoromethane, HFC-23) used as a total flooding agent • FE-241 (Chlorotetrafluoroethane, HCFC-124) used as a total flooding agent for non-occupied spaces and as a streaming agent • FE-25 (Pentafluoroethane, HFC-125) used in inerting and explosion suppression applications • FE-36 (Hexafluoropropane, HFC-236fa) used in portable fire extinguishers – is a replacement for Halon 1211 and Halon 1301 • FM100 (HBFC-22B1) used in portable fire extinguishers • Halon 2402 (Dibromotetrafluoroethane) limited use in military systems – requires a special permit in Australia • Halotron I (HCFC Blend B or HCFC-123) used as a total

	<p>flooding agent and streaming agent</p> <ul style="list-style-type: none"> • Halotron II (blend of HFC-143a and HFC-125) used as a total flooding agent and as a replacement for Halon 1301 • HCFC-22 (Chlorodifluoromethane) used as a propellant in some powder fire extinguishers (this product is banned in Australia but may be found on incoming foreign vessels) • HFC-134a (Unsymmetric tetrafluoroethane) used as a propellant in some powder fire extinguishers.
<i>Organisational policies and procedures</i> may include:	<ul style="list-style-type: none"> • job scheduling systems and communication devices • personnel practices and guidelines outlining work roles, responsibilities and delegations • procedures and work instructions to prevent the emission of ODS and SGG in the workplace • recording and reporting documentation and systems • relevant OHS policies, procedures and programs • relevant rules and regulations • standard operating procedures, work instructions and manuals.
<i>System components and materials</i> may include:	<ul style="list-style-type: none"> • actuators (pneumatic, electrical, mechanical and manual operation) • agent discharge nozzles • agent distribution pipework and hose networks • container bank manifold connections • container discharge valves • control equipment • detection devices • extinguishing agent containers, such as tanks and cylinders • flexible discharge hose and fittings, including hose check valve connected between container valve and fixed pipework manifold arrangement • pilot and slave tubes.
<i>Finalised design documentation</i> may include:	<ul style="list-style-type: none"> • finalised design documentation that meets the requirements of AS 4214 or equivalent that may include information about: <ul style="list-style-type: none"> • manufacturers' information • material safety data sheets on agents and equipment • system concentration and calculations • technical bulletins.
<i>Installation drawings</i> may include:	<ul style="list-style-type: none"> • installation drawings that meet the requirements of AS 4214 or equivalent and may include information about: <ul style="list-style-type: none"> • 'for construction' drawings • 'as installed' or 'as built' drawings.
<i>Pre-tested or prefabricated components</i>	<ul style="list-style-type: none"> • container with valve assembly • flexible discharge hose with fittings.

may include:	
Acceptable condition may include:	<ul style="list-style-type: none"> • use of safety devices • use of transport caps.
Tools, equipment and materials may include:	<ul style="list-style-type: none"> • hand tools, including: <ul style="list-style-type: none"> • hammers • nail guns • pliers • screwdrivers • spanners • spirit levels • manual-handling aids, including: <ul style="list-style-type: none"> • hand trucks • hooks • lifting magnets and straps • suction grips • trolleys • wheelbarrows • power tools, including: <ul style="list-style-type: none"> • battery powered drills • hammer drills • servicing tools and equipment, including: <ul style="list-style-type: none"> • hydrostatic test equipment • recharging and pressurising equipment • safety equipment • scales • service tag punch • fire equipment spare parts, including: <ul style="list-style-type: none"> • anti-tamper seals • hoses • labels • nozzles • pressure indicators • seals • service tags • valves • non-licensed mechanical-handling aids, including: <ul style="list-style-type: none"> • cranes • hoists • manually-operated forklifts and pallet trucks.

<p>Hardware components may include:</p>	<ul style="list-style-type: none"> • actuators • agent discharge nozzles • agent distribution pipework and hoses • bolts and nuts • container valves • control equipment • double-sided tape • extinguishing agent containers, such as tanks and cylinders • hex nipples • identifying signs • liquid adhesives • nails • pipe adaptor bush fittings • plugs • pneumatic detection devices • screws • support brackets • thread sealant.
<p>Work permits may include permits to:</p>	<ul style="list-style-type: none"> • enter a work site • enter a restricted area within a work site • enter a work site at specific times • ensure that specific OHS requirements are met before entering a work site.
<p>Safety procedures may include:</p>	<ul style="list-style-type: none"> • confirmed acceptable floor loading • container handling techniques • job safety analysis (JSA) performed for installation, in particular, manual handling.
<p>Customer requirements may include:</p>	<ul style="list-style-type: none"> • confirming installation instructions • confirming variations to installation instructions • following sign-in and sign-out procedures for entry to or exit from premises • providing non-routine or urgent services • providing routine services • sighting work permits • written or verbal confirmation of services provided and future services, such as maintenance.
<p>Hazards may include:</p>	<ul style="list-style-type: none"> • environmental, including: <ul style="list-style-type: none"> • improper use of hazardous material and other chemicals • improper use or emission of ODS and SGG; emissions may be caused by: <ul style="list-style-type: none"> • transporting, storing and manual handling containers containing ODS and SGG agents

	<ul style="list-style-type: none"> • servicing and maintaining container valve assemblies • installing and removing container valve assembly, manifold connection components and activating mechanisms • conducting interface tests during commissioning, servicing and decommissioning procedures between container activating mechanisms, control and indicating equipment (CIE) and fire alarm systems • ergonomic, such as incorrect manual-handling methods • any source of potential harm • equipment in a work site • hazards associated with electrical or mechanical faults • obstructive, such as blocked access to emergency entry or exit points • people in a work site • work methods, plans and procedures.
Actuators (also known as actuation control devices) may include:	<ul style="list-style-type: none"> • electrical operation: signal generated from the CIE panel as part of a fire alarm detection system • manual operation: by direct push lever or pull cable system • mechanical operation • pneumatic operation.
Auxiliary shutdown fire system and equipment:	<ul style="list-style-type: none"> • may include: <ul style="list-style-type: none"> • auxiliary shutdown valves that interrupt fuel or electricity supplies before the extinguishing agent is discharged • may interact with: <ul style="list-style-type: none"> • air conditioning equipment • fire dampers • lock-out switches for gas extraction.
Documentation may include:	<ul style="list-style-type: none"> • corrective action reports • customer recommendation forms • equipment recommendation forms • expense claims • job cards • maintenance record systems • manufacturers' system documentation • product documentation • service agreements • test results and test reports.

Unit Sector(s)

Fire protection equipment

Custom Content Section

Not applicable.