



Australian Government

CPCPFS3046A Test the integrity of water-based fire protection systems using pressure

Release 1

CPCPFS3046A Test the integrity of water-based fire protection systems using pressure

Modification History

This version first released with CPC08 Construction, Plumbing and Services Training Package Version 9.

- Change to unit title
- Outcomes changed to include references to draining down and recharging. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3035A Test fire protection systems for pressure

Unit Descriptor

This unit of competency specifies the outcomes required to perform air or water pressure testing on fire safety sprinkler and hydrant systems to establish the integrity of the water-based system or to identify and rectify leaks.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for pressure testing water-based fire protection systems.

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

Licensing/Regulatory Information

Licensing, legislative, regulatory or certification requirements may apply to this unit. Candidates are advised to check for regulatory 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 required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or 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 | Approved plans and specifications are obtained from relevant authority. |
| | | 1.2 | <i>Work health and safety (WHS) requirements</i> associated with testing fire protection systems for pressure, and workplace <i>environmental requirements</i> , are identified and applied to planning. |
| | | 1.3 | <i>Quality assurance requirements</i> are identified according to workplace requirements. |
| | | 1.4 | Tasks are planned and sequenced in conjunction with others involved in or affected by the work. |
| | | 1.5 | <i>Tools, equipment</i> and materials for testing fire protection systems for pressure, including personal protective equipment, are selected and checked for serviceability. |
| | | 1.6 | Work area is prepared to support efficient pressure testing of fire protection systems. |
| | | 1.7 | <i>Sustainability principles and concepts</i> are observed when preparing for and undertaking work process. |
| 2 | Identify testing requirements. | 2.1 | <i>Types and locations of tests</i> are determined from plans, specifications, and system pressure and flow specifications. |
| | | 2.2 | Appropriate testing equipment is prepared for application according to standards and workplace requirements. |

- 3 Test fire protection systems.
 - 3.1 **WHS requirements**, workplace **environmental requirements** and quality requirements are applied to work tasks.
 - 3.2 Test equipment is connected to system and pressure test is conducted according to standards and job specification.
 - 3.3 Test data is recorded in format required by the job specification and quality assurance procedures.
 - 3.4 If leak is identified, system is **isolated and drained down**, leak is repaired and system is re-tested to confirm integrity.
 - 3.5 System is recharged and restored to operational condition.

- 4 Clean up.
 - 4.1 Work area is cleared and waste materials disposed of or recycled according to **statutory and regulatory authority** requirements.
 - 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 regulatory authorities' and workplace requirements.

Required Skills and Knowledge

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

Required skills

- communication skills to:
 - enable clear and direct communication, using questioning to identify and confirm requirements, and share information
 - follow and give instructions
 - use language and concepts appropriate to cultural differences
 - use and interpret non-verbal communication, such as hand signals
- numeracy skills to apply measurements and calculations
- planning and organisational skills to:
 - plan and sequence tasks with others
 - plan and set out work
- problem-solving skills to:
 - determine safe draining down methods
 - identify and report faults in tools, equipment or materials to appropriate personnel
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required to test the integrity of water-based fire protection systems using pressure
- technology skills to:
 - access site-specific instructions in a variety of media
 - test fire protection systems for pressure, using air and water as testing media
 - use mobile communication technology
- writing skills to:
 - record test results
 - complete checklists and forms

Required knowledge

- components and operation of fire sprinkler systems and fire hydrant systems
- functions and operation of a range of taps and valves
- properties and characteristics of water pressure and flow rates
- relevant statutory and authority requirements relating to testing fire protection systems for pressure
- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement

- test procedures for sprinkler and hydrant systems
- workplace and equipment safety requirements that apply to the use of pressure testing equipment

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 should demonstrate the ability to:

- locate, interpret and apply relevant information, standards and specifications to test the integrity of water-based fire protection systems using pressure
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given both a fire sprinkler system and a fire hydrant system, the ability to conduct an air pressure test on one and a water pressure test on the other to achieve design and performance specifications of each system, ensuring:
 - application of sustainability principles and concepts
 - identification of requirements, design and details of the systems
 - selection and use of appropriate processes, tools and equipment
 - isolation and draining down of system and repair of leaks
 - completion of work to specification
 - compliance with regulations, standards and organisational quality procedures and processes
 - effective communication with others
 - safe work practices.

Context of and specific resources for assessment

Assessment of this unit:

- must be in the context of the work environment
- may be conducted in an off-site context, provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills
- must meet relevant compliance requirements.

Resource implications for assessment include:

- an induction procedure

- 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
- safety data sheets, job safety analyses and safe work method statements
- research resources, including industry-related systems information.

Method of assessment Assessment for this unit must verify the practical application of the required skills and knowledge, using one or more of the following methods:

- direct observation of tasks in real or simulated work conditions
- questioning to confirm the ability to identify and interpret the essential underpinning knowledge required for practical application.

Guidance information for assessment This unit could be assessed on its own or in combination with other units relevant to the job function.

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.

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.

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 requirements must comply with commonwealth, state and

- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices

territory legislation and regulations, and may include:

- 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

Environmental requirements:

- use of first aid equipment
- use of pressure-testing equipment
- workplace environmental health and safety.
- cover water quality management
- may include:
 - clean-up protection
 - stormwater protection
 - waste management.

Quality assurance requirements may include:

- Australian standards
- Environment Protection Authority (EPA) requirements
- internal company quality assurance policy and risk management strategy
- International Standards Organisation (ISO) standards
- site safety plans
- workplace operations and procedures.

Tools and equipment may include:

- elevated work platforms (EWPs)
- fall protection devices
- hand and power tools
- ladders
- scaffolds
- testing equipment.

Sustainability principles and concepts:

- cover the future social, economic and environmental use of resources
- may include efficient:
 - energy use
 - use and recycling of materials
 - water use, harvesting and disposal.

Types and locations of tests are to be determined according to the type of

- manufacturer
- Australian standards
- regulatory authority.

system and the requirements of:

Isolation and draining down must include:

- identifying the correct system
- isolating:
 - alarm initiating devices
 - alarm signalling equipment
 - control and indicating equipment (CIE)
 - emergency warning system
 - water supply
- operating the main drain valve
- identifying and operating low drain point valves, if present
- checking system for residual water pressure
- applying drain-down water management techniques to prevent water damage.

Statutory and regulatory authorities may include:

- state or territory statutory authority
- statutory plumbing authority.

Information may include:

- charts, drawings and sketches
- instructions issued by authorised organisational or external personnel
- memos
- organisation's work requirements
- regulatory and legislative requirements, particularly those relating to:
 - building codes
 - WHS and environmental requirements
 - plumbing regulations
- relevant Australian standards
- safe work procedures relating to the use of pressure testing equipment for ensuring the integrity of fire protection systems
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.