



Australian Government

CPCPFS3040A Conduct basic functional testing of water-based fire-suppression systems

Release 1

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Modification History

Prerequisite unit updated
Minor change to sustainability PC
Not equivalent to CPCPFS3020A

Unit Descriptor

This unit of competency specifies the outcomes required to complete weekly, monthly, and six-monthly inspection and testing procedures to verify that water-based fire-suppression systems function as intended. The unit involves working safely, isolating plant and interfaces, conducting compliance tests, visually inspecting, identifying non-compliance defects, fulfilling mandatory reporting requirements, and resetting water-based fire-suppression systems.

Application of the Unit

This unit of competency supports fire protection technicians responsible for functional testing of water-based fire suppression systems.

It does not apply to load or flow testing of water-based fire-suppression systems or pressure reducing or limiting valves.

Individuals operate within the scope of their defined roles and responsibilities and perform the functional tests as part of their work duties and according to work procedures and relevant Australian standards, to verify that equipment functions as intended.

The unit must be applied strictly according to relevant state or territory legislative and industry requirements.

Licensing/Regulatory Information

The fire protection technician is not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state or territory regulations).

Different states and territories may have regulatory mechanisms that apply to this unit. Candidates are advised to check for regulatory limitations.

Pre-Requisites

CPCPCM2043A	Carry out WHS requirements
	OR BOTH:
CPPCMN2002A	Participate in workplace safety arrangements
	AND
CPPFES2006A	Prepare for installation and servicing operations

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 compliance requirements to service operations.	1.1	<i>Legislative and industry requirements</i> are interpreted, confirmed and applied to <i>organisational requirements</i> .
		1.2	Preparations are made for the conduct of functional testing according to organisational requirements.
2	Conduct inspections and record results.	2.1	Workplace procedures are followed and risk control measures applied when inspecting <i>water-based fire-suppression systems</i> .
		2.2	<i>Key control valves</i> are identified and their functions determined with reference to manufacturer instructions to allow routine inspection activities according to

- legislative and industry requirements.
 - 2.3 Plant and other **system interfaces** that must be isolated to allow the inspection activities are identified.
 - 2.4 Visual inspections are conducted as described in legislative and industry requirements.
 - 2.5 Inspection results are recorded according to legislative and industry requirements.
 - 2.6 **Sustainability principles and concepts** are observed when preparing for and undertaking work process.
- 3 Conduct testing and record results.
- 3.1 Test methods are implemented according to legislative and industry requirements.
 - 3.2 Routine **testing procedures** are conducted according to the required **frequency schedule** to verify the system functions as intended.
 - 3.3 Test results are compared with legislative and industry requirements.
 - 3.4 Results are documented according to legislative and industry requirements.
 - 3.5 Report is prepared and forwarded to relevant persons for action according to legislative and industry requirements.
 - 3.6 System is reinstated according to organisational requirements.

Required Skills and Knowledge

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

Required skills

- customer service skills
- interpersonal skills to relate to people from a range of social and cultural backgrounds
- language, literacy and numeracy skills to:
 - communicate with others clearly and concisely, verbally and in writing
 - record and report information neatly and legibly
 - read and apply work instructions and specifications
 - read and record measurements
- planning and organising skills to:
 - estimate time to complete activities
 - prioritise tasks
- technical skills to:
 - identify system components
 - operate valves, switches and levers to test system operation
 - work safely when applying workplace housekeeping procedures

Required knowledge

- basic principles of operation and purpose of components of water-based fire suppression systems:
 - accelerators and exhausters
 - alarm 'dry' (i.e. deluge) control valve assembly components
 - alarm 'wet' control valve assembly components
 - batteries
 - circulation and system pressure relief valves
 - isolation and control valves
 - pressure and flow switches
 - pressure gauges
 - pump controllers and ancillary equipment for control and indication
 - pumpsets
 - retard chambers
 - solenoid valves
 - sprinkler heads
 - system block plans

- system pressure gauge schedules
- water motor alarm gong
- water supply tanks: atmospheric, pressure and suction with priming tanks
- general operation of water-based systems
- general operation of a gauge
- key features of legislation, regulations and codes applicable to inspecting and testing water-based fire-suppression systems
- metric and imperial pressure gauge readings
- systems and components:
 - air compressors fitted to systems
 - circulation and system pressure relief valves
 - controls on the pumpset controller panel:
 - fuel gauges
 - indicators
 - main isolating switch
 - flow switches and associated testing equipment
 - isolating valves associated with water-based fire-suppression system
 - main water supply underground key-operated valve location
 - pressure gauges
 - pumpsets associated with water-based fire-suppression system
 - pump starting switches
 - suction inlet strainers or screen on a static water supply for the water-based fire-suppression system
 - system block plan requirements for design details of systems installed since 1972
 - system main alarm bell and/or alarm strobe indicating building entry point for emergency personnel
 - system pressure gauge schedules, where required
 - system pressure maintenance or jacking pumps
 - water-based fire-suppression system control and alarm valves and ancillary equipment for control and alarm operation indication/interface
 - water supply tanks, water level indicators and automatic inflow valves
- terminology used in relation to water-based fire-suppression system
- water supply tanks:
 - atmospheric
 - pressure
 - suction with priming tanks
- water-based systems applications, as defined in AS 2118 Automatic fire sprinkler systems

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 basic functional testing of a range of water-based fire-suppression systems.

If all relevant aspects of evidence cannot be demonstrated in a work environment, the remainder should be assessed through realistic simulations, projects, or oral questioning on case study scenarios.

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 the ability to:

- apply sustainability principles and concepts when conducting basic functional testing of water-based fire-suppression systems
- apply safety requirements throughout the work sequence, including electrical safety requirements and the use of personal protective clothing and equipment
- complete tasks according to the relevant Australian standard
- conduct inspection and testing tasks specified in the weekly, monthly and six-monthly frequency schedule
- perform functional testing of the following water-based fire-suppression systems:
 - alternate wet or general systems with no pumpset system
 - alternate wet or general systems with pumpset system and tank
 - residential or domestic systems
 - combined sprinkler and hydrant systems
 - deluge systems
 - pre-action or recycle systems.

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.

Resource implications for assessment include:

- adequate water supply and draining or recycling arrangements to operate water-based fire-suppression systems
- operational water-based fire-suppression systems
- pictures and cut-away sections of control assemblies and

valves to show operation.

Method of assessment

Assessment methods must:

- 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

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.

This unit could be assessed on its own or in combination with other units relevant to the job function, for example:

- CPCPFS3041A Inspect and test fire pumpsets
- CPCPFS3042A Conduct annual functional testing of complex water-based fire-suppression systems
- CPCPFS3043A Conduct functional water flow testing.

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.

Legislative and industry requirements may include:

- dangerous goods regulations
- licensing arrangements
- environmental regulations
- WHS legislation, regulations and codes
- relevant commonwealth and state or territory building Acts, regulations and codes, such as National Construction Code (NCC)
- relevant Australian standards, such as:
 - AS 1851 Maintenance of fire protection systems and equipment
 - note: Australian standards are frequently revised and users must always check for currency and amendments
- other relevant legislation relating to fire suppression equipment, including:
 - international shipping codes
 - marine codes for different Australian states
 - requirements of Australian petroleum industry.

Organisational requirements may be located in quality assurance and procedures manuals and may include:

- client-specific contractual requirements
- documentation and information systems and processes
- legal and organisational policies and guidelines, including personnel practices and guidelines outlining work roles, responsibilities and delegations
- legislation relevant to service operation
- use of electronic job scheduling and communication devices.

Water-based fire-suppression systems are defined in AS 2118 Automatic fire sprinkler systems, and include:

- alternate wet or dry systems
- combined sprinkler or hydrant systems
- deluge systems
- dry systems
- pre-action or recycle systems
- residential and domestic systems
- tail-end systems
- wet and general systems.

Key control valves may include those:

- specified in AS 2118 Automatic fire sprinkler systems
- installed in:
 - associated control valve trim
 - activation small bore pipework to the alarm and control valve assembly.

System interfaces may include:

- components, such as:
 - flow switches
 - pressure switches
 - tamper switches
 - valve positioning switches
- devices that operate signals between the water-based fire-suppression system and other services, such as:
 - building heating, ventilation and cooling (HVAC) services
 - fire brigade monitoring providers
 - other life safety systems, such as:
 - warning systems
 - fire indicator panel (FIP).

Sustainability principles and concepts:

- cover the social, economic and environmental use of resources to meet current and future needs
- may include:
 - efficient use of material
 - efficient energy and water use
 - rain harvesting and disposal.

Testing procedures may include:

- organisational procedures for conducting testing activities according to AS 1851 Maintenance of fire protection systems and equipment, including procedures for:
 - checking desiccant condition (air dryer or crystals, water separator bowl) and cleaning or replacing as required
 - checking oil level and visually assessing condition of oil on air compressor.

Frequency schedules may include:

- schedules of work conducted at regular frequencies as defined in AS 1851 (general section) that relate to the work scope for weekly, monthly, and six-monthly inspection and testing schedules.

Unit Sector(s)

Competency field

Unit sector Plumbing and services

Custom Content Section

Not applicable.