



Australian Government

Department of Education, Employment and Workplace Relations

CPCPFS3021A Inspect and test fire pumpsets

Release: 1

CPCPFS3021A Inspect and test fire pumpsets

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit of competency specifies the outcomes required to complete weekly, monthly, and six-monthly inspection and testing procedures to verify that fire pumpsets function as intended. The unit covers working safely, conducting compliance tests, visually inspecting, and identifying non-compliance defects. It involves mandatory reporting requirements, as well as general isolations and resetting fire pumpsets.

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.

Application of the Unit

Application of the unit

This unit of competency supports fire protection technicians responsible for inspecting and testing fire pumpsets.

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

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

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units

CPCPCM2023A	Carry out OHS requirements
OR BOTH:	
CPPCMN2002A	Participate in workplace safety arrangements
AND	
CPPFES2006A	Prepare for installation and servicing operations

Employability Skills Information

Employability skills 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

ELEMENT	PERFORMANCE CRITERIA
1. Apply compliance requirements to service operations.	1.1. Legislative and industry requirements are interpreted, confirmed and applied to organisational requirements. 1.2. Location and equipment are checked for compliance with legislative and industry requirements, and action is taken according to organisational requirements. 1.3. Preparations are made for functional inspection and testing according to organisational requirements.
2. Conduct inspections and record results.	2.1. Workplace procedures are followed and risk control measures are applied when inspecting fire pumpsets. 2.2. Fire pumpset controls are identified and their function determined, with reference to manufacturer instructions in order to conduct inspections and tests 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. Fire pumpset inspection results are recorded against requirements according to legislative and industry requirements. 2.6. Sustainability principles and concepts are applied to work preparation and application.
3. Conduct tests and record results.	3.1. Methods for tests are implemented according to legislative and industry requirements. 3.2. Routine testing procedures are conducted according to the required frequency schedule to verify that 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 completed 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

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

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

Required knowledge

- application of fire pumpsets as defined in AS 2941 Fixed fire protection installations - Pumpset systems and AS 2118 Automatic fire sprinkler systems, and used in systems
- basic principles of hydraulics:
 - basic head or pressure calculation for height per metre
 - metric and imperial pressure scales
 - properties of water:
 - three states of matter
 - incompressible
- basic principles of operation and purpose of components:
 - accumulators
 - batteries
 - circulation and system pressure relief valves
 - compression ignition pumpset drivers
 - electrical pumpset drivers

REQUIRED SKILLS AND KNOWLEDGE

- engine starting and control or monitor batteries
- header tanks
- impellers
- isolating valves associated with pumpsets
- jacking or jockey pumps
- multi-stage pumps
- pressure gauges
- pump controllers and ancillary equipment for control and indications
- pump drivers
- pump glands and seals
- pump performance curves
- pump starting devices
- pumpset couplings
- safety guards
- system pressure gauge schedules
- water supply tanks:
 - atmospheric
 - pressure
 - suction with priming tanks
- general operation of pumpsets:
 - cooling systems
 - design speed requirements
 - exhaust systems
 - fuel systems
 - full load operation
 - normal running operation
 - pre-start and post-start checks
 - pumpset controllers
 - starting and stopping methods
 - suction and discharge connections and pressure readings
- terminology used in relation to pumpsets

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction

EVIDENCE GUIDE

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 inspecting and testing a range of types of fire pumpsets at customers' premises.

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 required skills and knowledge specified in this unit.

In particular the person should demonstrate the ability to:

- apply sustainability principles and concepts when inspecting and testing fire pumpsets
- apply safety requirements throughout the work sequence, including electrical safety, personal protective clothing and equipment
- conduct inspection and testing for the scheduled weekly, monthly and six-monthly activities according to the relevant Australian standard and on the following pumpsets:
 - compression ignition pumpset used as a booster pumpset on a sprinkler/hydrant system fed from:
 - town mains supply
 - static water supply
 - dual drive electric and compression ignition pumpset
 - electrical pumpset used as a:
 - booster pumpset on a sprinkler/hydrant system fed from a town mains supply or a static water supply
 - jacking pump or hose reel pump.

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 pumpsets under full load
- operational pumpsets
- pictures and cut-away sections of pumpsets to show operation.

Method of assessment Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the

EVIDENCE GUIDE

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:

- CPCPFS3020A Conduct basic functional testing of water-based fire-suppression systems
- CPCPFS3022A Conduct annual functional testing of complex water-based fire-suppression systems
- CPCPFS3023A Conduct functional water flow testing.

Range Statement

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
- environmental regulations
- licensing arrangements

RANGE STATEMENT

- OHS legislation, regulations and codes
- relevant commonwealth and state or territory building Acts, regulations and codes, such as Building Code of Australia (BCA)
- 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 protection 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.

Checking for compliance may include:

- undertaking commissioning tests detailed in relevant Australian standards and manufacturers' documents to verify performance of an installed, repaired or altered piece of equipment or system
- applying inspections, tests and survey requirements to equipment and systems, according to relevant Australian standards, to determine that they are:
 - capable of operating as intended when originally installed
 - still suitable for the fire hazard or risk being protected, as no change in occupancy or use of the area protected has occurred since the equipment or system was installed or last modified
 - providing the coverage and protection needed to meet original design and performance requirements
- reviewing documentation to verify that installed systems comply with legislative and industry requirements, such as:
 - building's essential services or fire safety measures

RANGE STATEMENT

- listing
 - relevant commonwealth and state or territory building Acts, regulations and codes
 - relevant Australian standards listed on essential service listing
 - environmental regulations.
- Action** may include:
 - advising client
 - documenting non-compliance
 - making equipment safe
 - reporting, as required.
- Pumpset** types may include:
 - those used in fire protection systems that comply with Australian standards, such as:
 - AS 1851 Maintenance of fire protection systems and equipment
 - AS 2118 Automatic fire sprinkler systems
 - AS 2419 Fire hydrant installations
 - AS 2941 Fixed fire protection installations - Pumpset systems
 - AS CA-1962 Automatic sprinkler installations
 - NFPA 20 Standard for the installation of stationary fire pumps for fire protection (US).
- System interfaces** may include:
 - components, such as:
 - flow switches
 - pressure switches
 - tamper switches
 - valve positioning switches
 - devices that operate signals between the pumpset and other services, such as:
 - building monitoring services
 - other life safety systems, such as:
 - warning systems
 - fire indicator panel (FIP)
 - security monitoring services.
- 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.

RANGE STATEMENT

Testing procedures
include:

- activities that comply with requirements of AS 1851 Maintenance of fire protection systems and equipment to verify the following pump functions:
 - pump starts at correct pressure
 - pump supplies correct kPa at no flow condition requirements.

Frequency schedules
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)

Unit sector Plumbing and services

Co-requisite units

Co-requisite units

Competency field

Competency field