



Australian Government

CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets

Release 1

CPCPFS3049A Conduct preventive maintenance on fixed fire pumpsets

Modification History

New unit.

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

Unit Descriptor

This unit of competency specifies the outcomes required to conduct preventive maintenance on circulatory systems, packed glands and special valves associated with fixed fire pumpsets.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for preventive maintenance of fixed fire pumpsets, excluding mechanical overhaul of both pump and power source.

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

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 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 | Plans, <i>information</i> , specifications, maintenance manuals, previous maintenance reports and equipment data are obtained and reviewed. |
| | | 1.2 | <i>Work health and safety (WHS) requirements</i> associated with conducting preventive maintenance of fixed fire pumpsets, 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 specified in relevant maintenance schedules or standards are planned and sequenced in conjunction with others involved in or affected by the work. |
| | | 1.5 | <i>Tools, equipment and materials</i> for maintaining fire protection special pump valves, including personal protective equipment, are selected and checked for serviceability. |
| | | 1.6 | Work area is prepared to support efficient preventive maintenance of fixed fire pumps. |
| | | 1.7 | Pump is <i>isolated</i> according to workplace requirements before conducting maintenance tasks. |
| | | 1.8 | <i>Sustainability principles and concepts</i> are observed when preparing for work process. |

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| 2 | Perform preventive maintenance tasks on pump circulatory system. | 2.1 | WHS requirements , workplace environmental requirements and quality requirements are applied to work tasks. |
| | | 2.2 | Cooling line strainer is disassembled, screen is removed and inspected, and materials found are identified and reported. |
| | | 2.3 | Screen is cleaned and strainer is reassembled according to workplace procedures. |
| | | 2.4 | Operation of circulatory valve is checked and valve is replaced if required. |
| | | 2.5 | Pump is de-isolated, start test is conducted, and water flow is checked at tundish or sight gauge. |
| 3 | Perform preventive maintenance tasks on packing glands. | 3.1 | WHS requirements , workplace environmental requirements and quality requirements are applied to work tasks. |
| | | 3.2 | Pump packing gland housing is disassembled and gland plate is removed. |
| | | 3.3 | Packing is removed using appropriate packing extractors and disposed of according to workplace and environmental requirements. |
| | | 3.4 | Gland is repacked according to manufacturer requirements. |
| | | 3.5 | Gland plate is reinstalled and adjusted according to manufacturer and workplace requirements. |
| | | 3.6 | Pump is de-isolated, operated and checked to ensure packing gland leak rate complies with manufacturer requirements. |
| 4 | Perform preventive maintenance tasks on special pump valves. | 4.1 | WHS requirements , workplace environmental requirements and quality requirements are applied to work tasks. |
| | | 4.2 | Pump pipework is drained down according to workplace requirements and checked to ensure there is no residual water pressure. |

- 4.3 **Special valves** are disassembled and housing is inspected according to manufacturer and workplace requirements.
 - 4.4 **Internal components of special valves** are inspected and replacements installed according to manufacturer and workplace requirements.
 - 4.5 Special valves are reassembled, pump is de-isolated and system is checked for correct operation according to manufacturer and workplace requirements.
- 5 Report anomalies and complete documentation.
 - 5.1 Inspection and testing results are recorded and anomalies reported according to legislative and industry requirements.
 - 5.2 Preventive maintenance documentation is completed and forwarded to relevant persons for action according to legislative and industry requirements.
- 6 Clean up.
 - 6.1 Work area is cleared and waste materials disposed of or recycled according to statutory and regulatory authority requirements.
 - 6.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.

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
 - identify and report anomalies and faults to appropriate personnel
 - 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
- reading skills to interpret drawings and specifications
- teamwork skills to work with others to action tasks
- technical skills to use tools and equipment required for preventive maintenance of fixed fire pumpsets
- technology skills to:
 - access site-specific instructions in a variety of media
 - use mobile communication technology
- writing skills to complete workplace documentation

Required knowledge

- components and operation of fixed fire pumpsets, including valves
- isolation and draining-down procedures
- job safety analyses (JSA), safety data sheets (SDS) and safe work method statements (SWMS)
- properties and characteristics of water, including pressure and flow rates
- relevant statutory and authority requirements relating to preventive maintenance of fixed fire pumpsets
- SI system of measurement
- signs of deterioration and wear on valve housings
- workplace and equipment safety requirements

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
- apply sustainability principles and concepts
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given a diesel-driven, packed gland fixed fire pumpset, perform preventive maintenance on:
 - circulatory system
 - packing gland
 - pressure relief valve
 - pressure reducing valve
- correct selection and use of appropriate processes, tools and equipment
- 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 and requirement
- 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.

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 preventive maintenance on fixed fire pumpsets
- safety data sheets (SDS)
- signage
- verbal, written and graphical instructions, including manufacturer specifications and instructions where specified
- work bulletins
- work schedules, plans and specifications.
- handling of materials
- hazard control
- personal protective clothing and equipment prescribed under legislation, regulations and workplace policies and practices
- 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
- use of firefighting equipment
- use of pressure testing equipment
- workplace environmental health and safety.
- cover water quality management
- may include:
 - clean-up protection
 - stormwater protection
 - waste management.
- Australian standards
- Environment Protection Authority (EPA) requirements
- internal company quality assurance policy and risk

Work health and safety requirements must comply with commonwealth, state and territory legislation and regulations, and may include:

Environmental requirements:

Quality assurance requirements may include:

	management strategy
	• International Standards Organisation (ISO) standards • site safety plans • workplace operations and procedures.
Tools, equipment and materials may include:	• hand and power tools • ladders • replaceable components, such as: • diaphragms • gaskets • gland packing materials • O-rings • springs • scaffolds • testing equipment.
Isolating procedures may be conducted on:	• alarm initiating devices • alarm signalling equipment • control and indicating equipment (CIE) • emergency warning system • power sources • water supply.
Sustainability principles and concepts:	• cover the current and future social, economic and environmental use of resources • may include efficient: • energy use • use and recycling of material • water use, harvesting and disposal.
Draining-down procedures include:	• 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.
Special valves may include:	• pressure reducing • pressure limiting • pressure relief.
Internal components of special valves may include:	• diaphragms • gaskets • O-rings • restrictors • springs.

Unit Sector(s)

Plumbing and services

Custom Content Section

Not applicable.