



Australian Government

CPCPFS3044A Install distribution and range pipes

Release 1

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Modification History

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

- Outcomes changed to include reference to draining down. References to sustainability and work health and safety strengthened
- Range of other minor editorial changes

Not equivalent to CPCPFS3032A Install distribution and range pipes

Unit Descriptor

This unit of competency specifies the outcomes required to install distribution and range pipes to carry all commonly used fire extinguishing agents, above and below ground. The installation may involve a new system or an alteration (extension or modification) to an existing system.

Application of the Unit

This unit of competency supports the work of fire protection industry personnel responsible for installing distribution and range pipes.

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

- | | | |
|---|-------------------------------------|---|
| 1 | Prepare for work. | <p>1.1 Approved plans and specifications are obtained from relevant authority.</p> <p>1.2 <i>Work health and safety (WHS) requirements</i> associated with installing <i>distribution and range pipes</i>, and workplace <i>environmental requirements</i> are identified and applied to task planning.</p> <p>1.3 <i>Quality assurance requirements</i> are identified according to workplace requirements.</p> <p>1.4 Tasks are planned and sequenced in conjunction with others involved in or affected by the work.</p> <p>1.5 <i>Tools and equipment</i> for installing distribution and range pipes, including personal protective equipment, are selected and checked for serviceability.</p> <p>1.6 Work area is prepared to support efficient installation of distribution and range pipes.</p> |
| 2 | Identify installation requirements. | <p>2.1 System requirements are identified from job design criteria, specifications and standards.</p> <p>2.2 Quantities of required <i>materials</i> are calculated from plans and specifications.</p> <p>2.3 Allowances for fabrication and assembly are correctly determined and transferred.</p> <p>2.4 Materials and equipment are identified, ordered and collected according to workplace procedures.</p> |

- 2.5 Materials and equipment are checked for compliance with standards, docket and order form, and acceptable condition.
- 3 Install piping system.
 - 3.1 WHS requirements, workplace environmental requirements and quality requirements are applied to work tasks.
 - 3.2 When altering existing systems, system is **isolated and drained down** to allow connection without causing water damage.
 - 3.3 Pipework is set out according to drawings, specifications and job instructions.
 - 3.4 Pipe supports and fixings are installed according to plans, manufacturer specifications, and relevant codes and standards.
 - 3.5 Piping and materials are installed according to design drawings, job specifications and standards.
 - 3.6 **Mechanical jointing systems** are installed according to design drawings, job instructions and standards.
 - 3.7 **Sustainability principles and concepts** are applied to installation.
- 4 Clean up.
 - 4.1 Work area is cleared, with 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:
 - determine pipe installation requirements
 - 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 and use safe draining down methods
 - 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 install distribution and range pipes and related components
- technology skills to:
 - access site-specific instructions in a variety of media
 - use mobile communication technology
- writing skills to complete workplace checklists and forms

Required knowledge

- characteristics and application of different pipe fittings and fixture supports, including fixing and joining techniques
- excavation processes and procedures required for installation of below-ground pipework
- levelling and alignment processes to ensure correct installation of pipework
- materials required to install distribution and range pipes
- processes for calculating material requirements
- properties and characteristics of water, including pressure and flow rates
- relevant statutory and authority requirements relating to installing distribution and range pipes

- requirements of job safety analyses (JSA) and safe work method statements (SWMS)
- SI system of measurement
- sources of relevant information relating to pipe installation 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 to install or modify distribution and range pipes
- apply safety requirements throughout the work sequence, including the use of personal protective clothing and equipment
- as a minimum, given the plans and specifications of an automated fire sprinkler system:
 - install distribution and range pipes to provide a free-flowing and leak-free water supply to at least three branches to design criteria and standards, ensuring correct identification of location, design and details of proposed installation
 - relocate two sprinklers in an existing system, including draining down the system
- complete work, ensuring:
 - application of sustainability principles and concepts
 - 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
- 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

- handling of materials

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

- 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
- workplace environmental health and safety.

Distribution and range pipes may include:

- all pipework downstream from the alarm valve, both above and below ground
- pipes composed of materials, including:
 - chlorinated polyvinyl chloride (CPVC)
 - copper
 - ductile iron
 - galvanised steel
 - high density polyethylene (HDPE)
 - mild steel
 - stainless steel
 - unplasticised polyvinyl chloride (UPVC).

Environmental requirements:

- 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

- angle grinders
- bending equipment

may include:

- chain blocks
- cutting and threading equipment
- elevated work platforms (EWPs)
- forklifts
- hand and power tools, including hand excavation tools
- hand trolleys
- hoists and jacks
- ladders
- lifting and load shifting equipment
- measuring equipment
- mechanical excavation equipment
- rollers
- scaffolds
- welding equipment.

Materials may include:

- fittings
- fixings
- hangers
- jointing materials
- pipe work
- supports.

Isolating 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.

Mechanical jointing systems may include:

- mechanical tees
- roll grooved:
 - couplings
 - elbows
 - tees.

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.
- Statutory and regulatory authorities** may include:
- state or territory statutory authority
 - statutory plumbing authority.
- Information** may include:
- charts and hand drawings
 - diagrams or 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 installing distribution and range pipes
 - 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.