



**Australian Government**

# **CPCPIG3022A Install and commission domestic irrigation pumps**

**Release 1**

# **CPCPIG3022A Install and commission domestic irrigation pumps**

## **Modification History**

Prerequisite unit updated

Changes to performance criteria, required skills and knowledge, range statement and critical aspects

Not equivalent to CPCPIG3012A

## **Unit Descriptor**

This unit of competency specifies the outcomes required to install and commission domestic irrigation pumps.

## **Application of the Unit**

Site location for work application is domestic, and may be a new work site or an existing structure being renovated, extended, restored or maintained.

## **Licensing/Regulatory Information**

In some jurisdictions, this unit of competency may form part of accreditation, licensing, legislative, regulatory or certification 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.                   | 1.1 | Irrigation plans and specifications are obtained and site is inspected.  |
|   |                                     | 1.2 | <b><i>Work health and safety</i></b> (WHS) and <b><i>environmental requirements</i></b> associated with installing and commissioning domestic irrigation pumps are adhered to throughout the work. |
|   |                                     | 1.3 | <b><i>Quality assurance requirements</i></b> are identified and adhered to according to workplace requirements.  |
|   |                                     | 1.4 | Tasks are planned and sequenced in conjunction with others involved in or affected by the work and <b><i>statutory and regulatory authorities'</i></b> requirements.                               |
|   |                                     | 1.5 | <b><i>Tools and equipment</i></b> for installing and commissioning domestic irrigation pumps, including personal protective equipment, are selected and checked for serviceability.                |
|   |                                     | 1.6 | Work area is prepared to support efficient installation and commissioning of <b><i>domestic irrigation pumps</i></b> .   |
| 2 | Identify installation requirements. | 2.1 | Irrigation system requirements are identified from plans, specifications and relevant <b><i>information</i></b> .  |
|   |                                     | 2.2 | Pump and installation <b><i>materials</i></b> are selected according to type, installation, range of flow rates, operating head and delivery distance.   |
|   |                                     | 2.3 | Pump is identified, ordered and collected according to workplace procedures.   |
|   |                                     | 2.4 | Pump is checked for compliance with standards, docket  |

and order form, and for acceptable condition.

- 3 Install and commission pump.
  - 3.1 Pumpset out position is compliant with irrigation plans and manufacturer recommendations.
  - 3.2 Pump base is installed according to plans and specifications and *sustainability principles and concepts*.
  - 3.3 Pump is positioned and fixed onto base.
  - 3.4 Suction and discharge lines are connected to pump according to manufacturer specifications.
  - 3.5 Piping is pressure tested according to job specifications.
  - 3.6 Operation of pump is tested and adjusted to achieve effective operation according to job and manufacturer specifications.
  - 3.7 Test data is recorded and documented in format required by quality assurance procedures.
  
- 4 Clean up.
  - 4.1 Work area is cleared and materials disposed of, reused or recycled according to legislation, regulations, codes of practice and job specification.
  - 4.2 Tools and equipment are cleaned, checked, maintained and stored according to manufacturer recommendations and workplace procedures.
  - 4.3 Documentation is completed according to workplace requirements.

## Required Skills and Knowledge

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

### Required skills

- communication skills to:
  - access information
  - determine requirements
  - enable clear and direct communication, using questioning to identify and confirm requirements, share information, listen and understand
  - follow instructions
  - use language and concepts appropriate to cultural differences
  - use and interpret non-verbal communication, such as hand signals
- initiative and enterprise skills to identify and report to appropriate personnel any faults in tools, equipment or materials
- literacy skills to:
  - complete workplace documentation
  - read and interpret:
    - documentation from a variety of sources
    - plans and specifications
  - record and document test data
- numeracy skills to apply measurements and calculations
- planning and organising skills to:
  - plan and sequence tasks with others
  - plan and set out work
- teamwork skills to work with others to action tasks and relate to people from a range of cultural and ethnic backgrounds and with varying physical and mental abilities
- technical skills to install and commission a centrifugal domestic irrigation pump
- technology skills to:
  - access and understand site-specific instructions in a variety of media
  - use mobile communication technology

### Required knowledge

- characteristics and application of different pipes and fittings, including:
  - fixing and joining techniques and methods
  - flow rates
- job safety analysis (JSA) and safe work method statements (SWMS)

- levelling and alignment processes
- mechanical, hydraulic and electrical principles
- process of installing and commissioning domestic irrigation pumps
- processes for accessing information and for calculating material requirements
- properties of water, including pressure and flow rates
- relevant statutory and authority requirements related to installing and commissioning domestic irrigation pumps
- SI system of measurement
- various types of domestic irrigation pumps
- workplace and equipment safety requirements

## Evidence Guide

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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 who demonstrates competency in this unit must be able to provide evidence of:

- locating, interpreting and applying relevant information, standards and specifications to install and commission domestic irrigation pumps
- applying safety requirements throughout the work sequence, including applying equipotential bonding procedures and using personal protective clothing and equipment
- given the plans and specifications for a domestic irrigation system, installing and commissioning for operation, a centrifugal pump (25mm suction and 25mm delivery), ensuring:
  - application of sustainability principles and concepts
  - correct identification of location, design and

details of proposed installation

- correct selection and use of appropriate processes, tools and equipment
- completing all work to specification
- compliance with regulations, standards and organisational quality procedures and processes
- communicating and working effectively and safely with others.

### **Context of and specific resources for assessment**

This competency is to be assessed using standard and authorised work practices, safety requirements and environmental constraints.

Assessment of essential underpinning knowledge will usually be conducted in an off-site context.

Assessment is to comply with relevant regulatory or Australian standards' 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
- material safety data sheets
- research resources, including industry-related systems information.

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.

### **Method of assessment**

Assessment methods must:

- satisfy the endorsed Assessment Guidelines of the Construction, Plumbing and 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.

Validity and sufficiency of evidence requires that:

- competency will need to be demonstrated over a period of time reflecting the scope of the role and the practical requirements of the workplace
- where the assessment is part of a structured learning experience the evidence collected must relate to a number of performances assessed at different points in time and separated by further learning and practice, with a decision on competency only taken at the point when the assessor has complete confidence in the person's demonstrated ability and applied knowledge
- all assessment that is part of a structured learning experience must include a combination of direct, indirect and supplementary evidence.

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.

Supplementary evidence of competency may be obtained from relevant authenticated documentation from third parties, such as existing supervisors, team leaders or specialist training staff.

## Range Statement

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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*** is to be

- handling of materials



according to 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:
  - identifying and testing for electrical hazards
  - dirt mounds
  - hazardous materials and substances
  - other machines
  - pits
  - poles
  - recently filled trenches
  - surrounding structure and facilities
  - traffic control
  - trees
  - trip hazards
  - underground services
  - uneven and unstable terrain
  - use of tools and equipment
  - work site visitors and the public
  - working in proximity to others
- use of firefighting equipment
- use of first aid equipment
- workplace environment and safety.

***Environmental requirements*** cover water quality management and may include:

- clean-up protection
- stormwater protection
- waste management.

***Quality assurance requirements*** may include:

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

***Statutory and regulatory authorities*** include:

- commonwealth, state or territory, and local authorities administering applicable Acts, regulations and codes of practice.

- Tools and equipment*** may include:
- concreting tools
  - hand and power tools
  - hand excavation equipment
  - levelling equipment
  - lifting and load shifting equipment, including:
    - chain blocks
    - forklifts
    - hand trolleys
    - hoists and jacks
    - rollers
  - water flow and water pressure test equipment.
- Domestic irrigation pumps*** may include:
- borehole and spear pumps
  - horizontal and vertical shaft centrifugal pumps
  - jet pumps
  - other approved pumps.
- Information*** may include:
- charts and hand drawings
  - instructions issued by authorised organisational or external personnel
  - job drawings
  - manufacturer specifications and instructions
  - maps
  - material safety data sheets (MSDS)
  - memos
  - organisation work specifications and requirements
  - plans and sketches
  - regulatory and legislative requirements, particularly those pertaining to:
    - building codes
    - WHS and environmental requirements
    - plumbing regulations
  - relevant Australian standards
  - safe work procedures relating to installing and commissioning domestic irrigation pumps
  - signage
  - verbal, written and graphical instructions
  - work bulletins
  - work schedules, plans and specifications.

**Materials** may include:

- cement and sand
- copper tube, polyethylene, stainless steel and PVC-U pipes
- joints and components
- other approved materials.

**Sustainability principles and concepts:**

- cover the current and future social, economic and environmental use of resources
- may include:
  - efficient use of material
  - minimising water wastage
  - considering use of alternative water supply
  - protection of drinking water supply
  - selecting appropriate components and material to ensure minimal environmental impact.

## **Unit Sector(s)**

**Functional area**

**Unit sector** Plumbing and services

## **Custom Content Section**

Not applicable.