



Australian Government

CPPSPS3004A Routinely maintain swimming pool and spa water circulation and filtration systems

Release: 1

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Modification History

Version	Comments
1	This version first released with CPP07 Property Services Training Package Version 13.

Unit Descriptor

This unit of competency specifies the outcomes required to carry out routine maintenance of swimming pool and spa water circulation and filtration systems. It includes preparing for routine maintenance to swimming pool and spa circulation and filtration systems; carrying out routine maintenance and repairs; and completing maintenance activities.

Application of the Unit

This unit of competency supports the work of swimming pool and spa technicians engaged in servicing domestic, commercial and public swimming pools and spas.

Licensing/Regulatory Information

Service technicians are not permitted to undertake any installation, replacement, maintenance and repair functions that are restricted to licensed trades or occupations (subject to relevant state and territory regulations). Different states and territories may have regulatory mechanisms that apply to this unit. Users are advised to check for regulatory limitations.

Pre-Requisites

Nil

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 routine maintenance. | <p>1.1 Applicable provisions of Australian standards, and legislative, manufacturer and enterprise requirements are identified and followed.</p> <p>1.2 <i>Work instructions</i> are obtained, reviewed and confirmed as required with <i>relevant persons</i>.</p> <p>1.3 <i>Swimming pool or spa water circulation and filtration system</i> to be serviced is identified and confirmed in line with enterprise requirements.</p> <p>1.4 Maintenance requirements of swimming pool or spa water circulation and filtration system are confirmed in line with enterprise procedures.</p> <p>1.5 <i>Tools and equipment</i> needed to carry out the work are selected and checked for correct operation and safety.</p> <p>1.6 Potential and existing <i>risks and hazards</i> in the work area are identified and controlled in line with work health and safety (WHS) and enterprise requirements.</p> |
| 2 Carry out routine maintenance. | <p>2.1 <i>Personal protective equipment</i> is selected and used in line with WHS and enterprise requirements.</p> <p>2.2 Swimming pool or spa water circulation and filtration system is inspected and assessed for operational effectiveness against normal operating criteria.</p> <p>2.3 <i>Routine servicing</i> of swimming pool or spa water circulation and filtration system is carried out in line with manufacturer instructions and enterprise</p> |

procedures.

2.4 ***Faults*** are identified and ***routine repairs*** undertaken in line with manufacturer instructions and client and enterprise requirements.

2.5 Complex faults and repair requirements are reported to relevant persons in line with enterprise requirements.

3 Complete maintenance activities.

3.1 Serviced and repaired swimming pool or spa water circulation and filtration system is reinstated to operational condition in line with work instructions and enterprise procedures.

3.2 Work area is restored to original condition and checked for safety hazards, waste is disposed of, and tools and equipment are cleaned and stored in line with WHS and enterprise requirements.

3.3 Malfunctions, faults, wear or damage to swimming pool or spa and environs, tools and equipment are reported for repair or replacement in line with enterprise procedures.

3.4 Notification of work completion is made to relevant persons in line with enterprise procedures.

3.5 Information is provided to clients on compliance of swimming pool or spa and environs with safety legislation in line with enterprise requirements.

3.6 Relevant documentation is completed and securely maintained in line with enterprise procedures.

Required Skills and Knowledge

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

Required skills

- communication skills to interact in an ethical manner with clients from diverse social, economic and cultural backgrounds
- decision-making and problem-solving skills to identify faults in swimming pool and spa circulation and filtration systems
- literacy skills to read and interpret work instructions
- numeracy skills to read gauges and perform calculations, such as turnover rate, filter media rate and flow rate related to swimming pool and spa circulation and filtration systems
- research skills to locate manufacturer's and other information on components and operation of swimming pool and spa circulation and filtration systems
- technology skills to use tools and equipment required to carry out routine maintenance on swimming pool and spa circulation and filtration systems

Required knowledge

- Australian Competition and Consumer Commission product safety guidelines
- commonwealth, state or territory, and local government legislation and regulations, Australian standards, and codes of practice impacting on the routine maintenance of swimming pool and spa circulation and filtration systems related to:
 - dangerous goods
 - electrical and plumbing regulations controlling conduct of electrical and plumbing work
 - environment protection
 - environmental health
 - work health and safety
 - private and public swimming pools and spas
 - waste disposal
- backwashing:
 - flow
 - operation
 - period
- entrapment:
 - causes
 - consequences
 - safety measures to minimise risk of entrapment:
 - design

- maintenance
- filtration principles:
 - clarity
 - turbidity
- flocculation or coagulation causes and remedies
- swimming pool and spa circulation system:
 - common faults
 - components:
 - circulation pumps
 - control systems
 - dosing systems
 - gauges used to determine circulation performance
 - motors
 - piping
 - pressure side elements
 - suction side elements
 - valves
 - water meters used to determine circulation performance
 - design
 - direct suction
 - flow rate:
 - calculation
 - purpose
 - hydraulics
 - maintenance procedures
 - operating principles
 - overflow testing, i.e. dye testing
 - purpose of circulation system
 - surface water removal
 - system types
 - total dynamic head:
 - calculation
 - purpose
 - turnover rate:
 - calculation
 - purpose
 - types of circulation systems
 - swimming pool and spa filtration system:
 - common faults
 - filtration

- filter area
- filter media
- filter media changeover:
 - bather load
 - cleaning regime
 - location (indoor or outdoor)
 - pool volume
 - pool water temperature
 - turnover
 - water balance
- filter media rate
- limits of filtration
- maintenance procedures
- operating principles
- purpose of filtration system
- types of filter:
 - cartridge filtration
 - diatomaceous earth
 - pre-filter
 - sand filtration
- water clarity problems, causes and remedies

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 carrying out routine maintenance of swimming pool and spa water circulation and filtration systems.
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 carry out routine maintenance of swimming pool and spa water circulation and filtration systems - apply safety requirements throughout the work sequence, including using personal protective clothing and equipment - carry out routine maintenance activities on the circulation and filtration systems of swimming pools and spas, including identifying faults and undertaking routine repairs in line with manufacturer instructions and client and enterprise requirements - report complex faults and repair requirements to relevant persons in line with enterprise requirements - restore work area to original condition and check swimming pool or spa and environs for safety hazards - ensure that waste is disposed of and tools and equipment are cleaned and stored in line with WHS and enterprise requirements.
Context of and specific resources for assessment	Assessment of essential underpinning knowledge may be conducted in an off-site context and is to comply with relevant regulatory and Australian Standards' requirements. Resource implications for assessment include: - relevant codes, standards and government regulations - a technical reference library with current publications on: - swimming pool and spa circulation and filtration systems - components - entrapment causes and mitigation measures.
Method of assessment	Assessment methods must: - satisfy the endorsed Assessment Guidelines of the CPP07 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. This unit could be assessed on its own or in combination with other units relevant to the job function.
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.

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.

<i>Work instructions</i> may include:	- access to site and specific site requirements - circulation and filtration system information: - features, functions and capabilities - manufacturer instructions - service and maintenance requirements - warranties and guarantees - equipment and systems location information - equipment, tools and material requirements - personal protective clothing and equipment requirements - reporting requirements - specific client requirements - timeframes - work schedules - work tasks and procedures.
<i>Relevant persons</i> may include:	- client - colleague - equipment and systems manufacturer - site manager or project manager

	• supervisor • swimming pool or spa manager or operator • technician.
Swimming pool and spa circulation systems may include:	• system components: • circulation pumps: • motor • wet end • control system • dosing system • piping • pressure side elements: • chemical feeders • flow meters • heating systems • pressure filters • return inlets • separation tanks • suction side elements: • collection or balance tanks • covers • gutters • integrated cleaning system • main drains • skimmers • vacuum filters • vacuum fittings • vacuum gauges • valves: • ball • butterfly • distribution • gate • multi-port: check, globe, rotary and slide • system types: • direct suction • overflow.
Swimming pool and spa filtration systems may include:	• filter mode: • pressure filter • vacuum filter

	• filter types: • cartridge • diatomaceous earth • sand • cartridge filters: • depth penetration filters • surface filters • diatomaceous earth: • media types • pressure diatomaceous filters • regenerative filters • vacuum diatomaceous filters • sand filters: • media: • glass • sand • zeolite • types: • gravity sand filters • high rate sand filters • horizontal modular high rate sand filters • multi-cell high rate sand filters • rapid rate sand filters • vacuum high rate sand filters.
Tools and equipment may include:	• communications equipment • computer and software • hand tools • ladders • personal protective equipment • power tools.
Risks and hazards may include:	• chemical hazards • confined spaces • electrical hazards • exposure to: • algae • asbestos • bodily fluids • contaminated surfaces • contaminated water: • bacteria

	• faecal • viruses • disinfection by products • dogs • dust • fibres • glass • heights • insects • live power • natural and other gas build-up • noise • snakes • spiders • sun • swimming pool and spa chemicals • vermin • weather • hydraulic entrapment • inadequate ventilation • manual handling • non-compliance with building codes and regulations • personal health hazards • plant and equipment hazards • pressure • trips and falls • water hazards.
Personal protective equipment may include:	• buoyancy vest or personal flotation device (PFD) • gloves • hard hat or protective head covering • hearing protection (e.g. earplugs and earmuffs) • high visibility vest • non-slip and waterproof boots or other safety footwear • protective eyewear and glasses • protective outdoor clothing • respirator or face mask • safety harness • sun protection (e.g. sunhat, sunscreen and sunglasses) • uniforms or overalls • water-resistant clothing.

<i>Routine servicing</i> may include:	• adjustments • cleaning • confirming operation • identifying leaks • identifying worn parts • inspecting • lubricating • programming automated systems • replacing worn parts • routine repairs • testing.
<i>Faults</i> may include:	• air leakages • broken or missing drain covers • cavitation • circulation equipment damage or malfunction • debris • filters: • filtration equipment damage or malfunction • flow rate to pool below minimum required and low influent pressure • high filter pressure • ineffective filtration • pool water is not clear or clean • sand and diatomaceous earth • sand in waste water • short filter cycles • sizing • suction • unfiltered water returning to pool • flow velocity through main drain • inadequate flow rate • inadequate turnover rate • ineffective removal of surface water • leaks • motors: • fail to start • noisy • overheating • pump: • no line pressure • pump fails to prime

	• water quality.
<i>Routine repairs</i> may include:	• circulation system: • motors and pumps: • repair non-electrical components • valves: • repair non-electrical and low voltage equipment • replace valve • piping: • check pipe sizing for correct flow • general pressure testing • replace piping • filtration system: • clean components and media • replace components • service and replace media • service components.

Unit Sector(s)

Competency field

Unit sector Swimming pools and spas

Custom Content Section

Not applicable.