



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG322A Operate sprinkler irrigation systems

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of operating sprinkler irrigation systems and defines the standard required to: read and follow operations manual and irrigation schedules; carry out pre-start checks; operate and inspect the system; measure and interpret flow rates and pressures; identify environmental hazards; and shut down in response to irrigation indicators.

Application of the Unit

This Unit applies to skilled workers in the irrigation servicing, food and fibre production and amenity horticulture industries, and is likely to be carried out under routine supervision within enterprise guidelines.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

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 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 Carry out pre-start checks	1.1 Checks of water, power, fuel and lubricants ensure that all are available and the control system is operational 1.2 Pumps are primed, if necessary, and valves and controls are open or closed as directed 1.3 Pressure and flow testing equipment are calibrated and available as required 1.4 Other pre-start system checks are carried out in accordance with manufacturer's requirements and enterprise procedures
2 Inspect and operate the system	2.1 Start up sequence is implemented in accordance with operations manual 2.2 Sprinkler spacing is checked against the irrigation plan 2.3 Water pressure and volume is adjusted as required 2.4 Water is delivered as per irrigation schedule 2.5 All malfunctions, leaks and blockages are corrected or repaired immediately and reported in accordance with enterprise procedures
3 Monitor sprinkler irrigation system performance	3.1 Pressure at sprinkler nozzles and on main and lateral pipelines is checked against specifications 3.2 Application rate of water is calculated 3.3 The water distribution pattern in the irrigated area is checked 3.4 Moisture levels in the root zone are checked 3.5 Identify and report any environmental hazards identified
4 Shut down sprinklers in response to irrigation indicators	4.1 Water is applied for sufficient time to achieve required soil moisture levels in accordance with irrigation schedule, environmental considerations and allowing for weather conditions 4.2 System components are shut down and drained in sequence in accordance with manufacturer's specifications and enterprise procedures 4.3 Drainage and treatment systems are checked in accordance with enterprise procedures 4.4 Irrigation activities are recorded and in reported accordance with regulatory requirements and enterprise procedures

Required Skills and Knowledge

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

Required skills include:

Ability to:

- read and follow operations manual and irrigation schedules
- operate pressure and flow testing equipment
- carry out pre-start checks and prime pumps
- start up system and carry out operational checks
- measure and interpret flow rates and pressures
- monitor system effectiveness
 - application rates
 - irrigation times
 - sprinkler output
 - pressure variations
 - salinity levels and water quality
 - depth of irrigation
 - energy efficiency
- connect, calibrate and operate the equipment, and monitor and adjust the delivery of fertilisers
- shut down, clean equipment and dispose of waste
- use personal protective equipment
- perform shut down procedures
- carry out measurements for output and efficiency
- take and record measurements of output and efficiency
- record data.

Required knowledge includes:

Knowledge of:

- general irrigation methods for sprinkler systems
- main components of sprinkler irrigation systems
- pump types used in sprinkler irrigation systems and their operation
- energy efficiency indicators/ benchmarks for sprinkler irrigation
- shutdown sequence
- environmental impacts of irrigation using water from any ground or underground source
- soil characteristics
- soil/plant/water relationships
- water requirements of plants/crops consistent with sound environmental management
- critical measures for moisture availability
 - readily available water

- water holding capacity
- wilting point
- field capacity
- infiltration rates
- evapotranspiration
- OHS legislation and procedures
- electrical hazards
 - contact with pumps, motors, other live components
 - short circuits
 - standing laterals to remove blockages
 - water spray onto powerlines.

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	
Critical aspects for assessment and evidence required to demonstrate competency in this Unit	The evidence required to demonstrate competency in this Unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following: • read and follow operations manual and irrigation schedules • carry out pre-start checks • operate and inspect the system • measure and interpret flow rates and pressures • identify environmental hazards • shut down in response to irrigation indicators.
Context of and specific resources for assessment	Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

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.

Sprinkler irrigation systems may include:

any systems that use spray or rotor type sprinklers to distribute irrigation water at higher volume including pop-up sprinklers, fixed, and movable sprinklers (e.g. K Line and Ezy Shift).

System components may include:

- pumps
- sprinklers
- nozzles
- risers
- pipe or tubing
- valves
- regulators and gauges
- laterals
- controllers.

Unit Sector(s)

Irrigation