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DR AS 2118.2:2020, Automatic fire sprinkler systems, Part 2: Drencher systems



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Draft

Australian Standard

Public Comment is invited for:

DR AS 2118.2:2020, *Automatic fire sprinkler systems, Part 2: Drencher systems*

Public Comment period:

Start date: 31 August 2020

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This draft is liable to alteration. It is not to be regarded as an Australian Standard until finally issued as such by Standards Australia.

Upon successful conclusion of the Public Comment period it is proposed to publish this Standard as AS 2118.2:202X.



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Comments are welcome on the technical content, wording and general arrangement of the draft. How the requirements of this draft coordinate with other Standards is of particular importance and you are invited to point out any areas where changes or additions to this draft may be necessary. Editorial matters (i.e. spelling, punctuation, grammar, etc.) will be corrected before final publication.

Please provide supporting reasons and suggested wording for each comment. Where you consider that specific content is too simplistic, too complex or too detailed please provide an alternative.

If the proposed Standard is acceptable for Australia without change, an acknowledgement to this effect would be appreciated.

Only comments submitted via the Standards Australia Standards Hub site before midnight on the closing date will be reviewed by the committee. The Hub automatically submits comments to the committee. Any other communication will not be considered by the committee.

At the expiry of the comment period, the committee responsible for the document is obliged to give serious consideration to all comments received. However, normally no acknowledgement of comment is sent.

Preface

This Standard was prepared by the Standards Australia Committee FP-004, Automatic Fire Sprinkler Installations, to supersede AS 2118.2—2010, *Automatic sprinkler systems, Part 2: Drencher systems*.

The objective of this document is to provide system designers and installers with a set of requirements for the design, installation and commissioning of wall wetting sprinkler systems to provide protection to a building that is exposed to an external fire source feature (allotment boundary or another building on the same allotment), or an egress path passing by an unprotected opening(s) in a building.

NOTE Atrium protection details are contained in the NCC.

The objective of this revision is to revise the type of drenchers (sprinklers) to be installed, including their orientation, to enhance the efficacy of the drencher system.

The AS 2118 suite of sprinkler Standards is structured into two groups: Systems (AS 2118 series) and Component (AS 4118 series). A list of all parts in the AS 2118 and AS 4118 series can be found in the Standards Australia online catalogue.

The major changes in this edition are as follows:

- (a) Alignment with NCC terminology.
- (b) Update to technical equipment in line with recent research testing and results.
- (c) Update of design criteria in line with recent research testing and results.
- (d) Clarification on the water supply requirements for different applications of this standard.
- (e) Limit of protection provided by wall wetting sprinklers to 40 kW per m² in response to recent research testing and results.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

A Note to a clause in this document is designed to draw attention to a condition that needs to be considered when applying the clause; for example, a reminder that another Standard needs to be consulted which could conflict with the clause.

A Commentary is an explanation as to why the clause was written or developed and is primarily intended to assist with how the clause would be applied in practice (see panel below).

This Standard incorporates a Commentary on some Clauses. The Commentary directly follows the relevant Clause, is designated by “C” preceding the clause number and is printed in italics in a panel. The Commentary is for information only and does not need to be followed to conform to the Standard.

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Introduction

Where heat radiated by a fire source feature impinges on an unprotected opening infill of the building at sufficient levels, failure of the infill and ignition of the contents can occur. To mitigate this risk, wall wetting sprinklers are required by the National Construction Code (NCC) to provide protection where fire can spread from a fire source feature to the building.

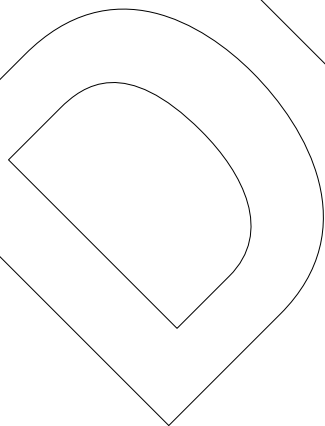
Wall wetting sprinklers may also be required by the National Construction Code (NCC) to provide protection to a path of travel.

Research on the behaviour of glazing under radiant heat conditions and the ability to protect openings has shown that when water is sprayed uniformly and covering the entire surface area of a glass infill, it can reduce the risk of failure and the passage of radiant heat. Similarly, a uniform and complete film of water onto both combustible and non-combustible (but not fire rated) infills in wall openings, can reduce the radiant heat transfer from an exposure fire and help prevent ignition or deformity. However, the protection criteria in this document is limited to a maximum radiant heat exposure of 40 kW/m².

The purpose of wall wetting sprinkler systems is to provide sufficient and uniform water spray upon opening infills, such as windows and doors, to mitigate the effects of radiant heat from adjacent fire sources.

The title of this Standard, “Wall Wetting Sprinklers”, has been chosen to align with the NCC terminology; however it only covers design requirements specifically for wall opening infill protection where required by the NCC.

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NOTES

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Australian Standard®

Automatic fire sprinkler systems

Part 2: Drencher systems

Section 1 Scope and general

1.1 Scope and application

1.1.1 Scope

This Standard sets out requirements for the design, installation and commissioning of wall wetting sprinkler systems intended to provide automatic external and or internal protection to infills (windows, doors and other wall openings) from an adjacent fire source in an otherwise non-sprinkler protected building.

C1.1.1 Wall wetting sprinkler systems may be either internal or external. This document covers external protection of fire source exposed building infills and where egress paths pass unprotected openings of the building, as required in the NCC.

1.1.2 Application

Wall wetting sprinkler systems designed to this document, are intended to meet the requirements of the NCC wherever “Wall Wetting Sprinklers” are required for otherwise non-sprinkler protected buildings and where the radiant heat exposure does not exceed 40 kW/m². Where a building is not sprinkler protected throughout, but the sprinkler protected areas are in accordance with AS 2118.1:2017, AS 2118.4, AS 2118.6 or FPAA101H, wall wetting sprinklers, where required by the NCC for the non-sprinkler protected parts of the building, shall be designed to this document.

NOTE 1 Atrium protection details are contained in the NCC.

NOTE 2 Refer to the Verification Methods CV1 and CV2 of the NCC for more information on the level of heat flux that can be received by a building from a fire source feature.

NOTE 3 Where atrium wall wetting sprinklers are installed in a sprinkler protected building in accordance with the requirements of the NCC, the provisions of this document may be used for sprinkler positioning.

C1.1.2 The application of this Standard is for buildings or parts of buildings that do not otherwise have internal sprinkler protection. Where the building, or part of that building, is internally sprinkler protected, reference should be made to the design documents for those internal systems with regards to external wall wetting design and installation.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this Document:

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS 1670, *Automatic fire detection and alarm systems—System design, installation and commissioning*

AS 1851, *Routine service of fire protection systems and equipment*

AS 2118.1:2017, *Automatic fire sprinkler systems, Part 1: General requirements*

AS 2419, *Fire hydrant installations, Part 1: System design, installation and commissioning*

AS 2484.1, *Fire—Glossary of terms, Part 1: Fire tests*

AS 2484.2, *Fire—Glossary of terms, Part 2: Fire protection and firefighting equipment*

AS 2941, *Fixed fire protection installations—Pumpset systems*

AS 4118, *Fire sprinkler systems, Part 1.1: Components—Sprinklers and sprayers*

AS/NZS 3500.0, *Plumbing and drainage, Part 0: Glossary of terms*

AS/NZS 3500.1, *Plumbing and drainage, Part 1: Water services*

FPAA101H, *Automatic Fire Sprinkler System Design and Installation — Hydrant Water Supply*

1.3 Definitions

For the purpose of this document, the definitions given in AS 2484.1, AS 2484.2, AS/NZS 3500.0 and those below apply.

1.3.1

fire source feature

as defined in the NCC

1.3.2

listed

products listed for fire protection application by an internationally recognized testing laboratory or approval body

Note 1 to entry: A register of accredited products is issued by the CSIRO ActivFire Scheme.

Note 2 to entry: The following are examples of internationally recognized testing laboratories or approval bodies:

- (a) Factory Mutual Insurance Company (FM Global)
- (b) Underwriters Laboratories (UL)
- (c) Loss Prevention Council (LPC)
- (d) Verband der Schadenverhütung (VdS)

1.3.3

opening infill

door, window, shutter or other element of construction that can be protected against the passage of radiant heat

1.3.4

open sprinkler

sprinkler without a heat-sensitive element suitable for use on normally dry pipework in a deluge sprinkler system

1.3.5

relevant authority

agency authorized by legislation or regulation to issue determinations, orders, or other instructions in respect of any subject covered by this document

Note 1 to entry: Where adoption of this document is not a requirement of a relevant authority but is a requirement of a body such as an insurance company or association, then that body, or its nominees, may perform the functions of the relevant authority for the purposes of this document.

1.3.6**sealed sprinkler**

sprinkler with a heat-sensitive element suitable for use on either wet or normally dry pipework in a wall wetting sprinkler system

1.3.7**wall wetting sprinkler protection**

water applied by a wall wetting sprinkler system to an opening infill in an internal or external wall in a manner designed to achieve complete coverage by direct impingement and rundown

1.4 Types of systems**1.4.1 Wet systems**

Where there is no risk of water in the pipes freezing, wall wetting sprinkler systems shall —

- (a) be permanently charged with water; and
- (b) incorporate an isolation valve (main stop valve), a check valve, system drain valve and remote test valve(s).

1.4.2 Dry systems

Dry systems shall be used in areas where there is a risk of water in the pipes freezing and be provided with a deluge valve or dry pipe alarm valve, an isolation valve (main stop valve), system drain valve(s) and either —

- (a) sealed sprinklers and dry pipework, permanently charged with air or inert gas under pressure above the alarm valve (dry); or
- (b) open sprinklers and dry pipework controlled by a deluge valve that is automatically actuated by either, a listed heat-detection system installed to AS 1670 or a pilot sprinkler detection system installed in accordance with AS 2118:1.

C1.4.2 Dry systems with open sprinklers are most suitable for use where there is a potential for ice plugging of pendent sealed sprinklers.

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Section 2 System design

2.1 General

Water applied by a wall wetting sprinkler system to an opening infill in a wall shall be applied in such a manner as to achieve complete and uniform coverage by direct impingement and rundown.

Wall wetting sprinkler systems may be independent or form part of other fire service installations subject to the requirements of [Section 3](#).

C2.1 *The provision of wall wetting sprinklers over glazed openings utilizing float glass may not prevent glazing failure. All research testing used tempered glass, which should be the minimum installed. Further, the provision of wall wetting sprinklers over openings (glazed or otherwise) while providing a degree of protection against a radiant heat exposure up to a maximum of 40 kW/m², is not acknowledged as providing any specific Fire Resistance Level (FRL) to that opening. Wall wetting sprinklers rely on providing water flow over an infill surface and are not considered suitable for protecting an unfilled opening.*

2.2 Wall wetting sprinklers

Wall wetting sprinklers shall be DN 15 mm orifice (K factor $8.0 \pm 5\%$) sprinklers and either —

- (a) pendent or upright sidewall, mounted vertically with the deflector pointing towards the infill (spray directed toward the window, door or other infill); or
- (b) sprinklers specifically designed for the purpose (window sprinklers), installed in accordance with their listing and data sheets.

Conventional, spray (pendent or upright) and horizontal sidewall sprinklers shall not be used.

2.2.1 Sealed sprinklers

Sealed sprinklers shall be —

- (a) rated as quick response;
- (b) have a temperature rating of not more than 93 °C; and
- (c) oriented so that the heat-sensing element is visible (directly exposed) to the radiant heat source and not shielded by the body or arms of the sprinkler.

2.3 Design flow from wall wetting sprinklers

Wall wetting sprinklers shall conform to the following:

- (a) They shall be designed so that flow from the hydraulically most unfavourable sprinkler, when the required number of sprinklers are in simultaneous operation, is not less than —
 - (i) 75 L/min; or
 - (ii) 55 L/min where individual windows are 1.8 m wide or less and are separated by a wall section that is greater than 500 mm wide.
- (b) The flow shall be fully hydraulically calculated. The hydraulic calculation methods shall conform to the requirements of AS 2118.1:2017.

2.4 Wall wetting sprinklers in simultaneous operation

The number of sprinklers designed to operate simultaneously shall be as follows:

- (a) For sealed sprinklers, all those opposite the fire source feature up to a maximum of 12 operating sprinklers.
- (b) For open sprinklers, all those opposite the fire source feature up to a maximum of 12 operating sprinklers or all those on a single deluge valve, whichever is the greater.

NOTE This Clause does not preclude designing for more than 12 sprinklers in simultaneous operation if so required by the authority having jurisdiction or the design features of the system (open sprinklers).

2.5 Sprinkler spacing and location

2.5.1 General

Wall wetting sprinklers shall be installed to cover each independent infill opening.

Except where special window sprinklers are installed in accordance with [Clause 2.7](#), wall wetting sprinklers shall be spaced in accordance with [Clauses 2.5.2](#), [2.5.3](#) and [2.5.4](#).

2.5.2 Vertical spacing

Vertical spacing of wall wetting sprinklers shall be in accordance with the following:

- (a) Vertically continuous opening infills that have no mullions or other features projecting horizontally from the surface that would disrupt the uniform rundown of the sprinkler water film, as follows:
 - (i) At a maximum vertical spacing of 4600 mm, measured from deflector to deflector, for glazed and combustible infills, as shown in [Figure 2.1](#).
 - (ii) At a maximum vertical spacing of 6000 mm, measured from deflector to deflector, for continuous non-glazed non-combustible infills, as shown in [Figure 2.1](#).
- (b) Vertically continuous opening infills that have mullions or other features projecting horizontally from the surface that would disrupt the uniform rundown of the sprinkler water film, located just below each mullion or other feature as specified in [Clause 2.5.4](#).

2.5.3 Horizontal spacing

Horizontal spacing of wall wetting sprinklers shall be in accordance with the following:

- (a) Horizontally measured from the centre of sprinklers, at a maximum distance of 2500 mm, and a minimum distance of 1800 mm apart if not separated by a baffle or building feature that will prevent cooling from an adjacent operating sprinkler, as shown by [Figure 2.2\(A\)](#).
- (b) Horizontally measured from the centre of sprinkler, at a maximum distance of 1250 mm —
 - (i) from the vertical extremities of each glazed opening or infill, with the infill sprinkler located within the opening;
 - (ii) from a vertical mullion or baffle; or

- (iii) from the centre of any building feature such as downpipes and glazing bars or mullions, which are wider than 40 mm and project more than 40 mm from the protected surface as shown in [Figure 2.2\(B\)](#).
- (c) Where vertical glazing bars, mullions or building features less than 40 mm in width project less than 40 mm from the opening infill surface, standard sprinkler spacing may be applied, as shown in [Figure 2.1](#).
- (d) Where vertical glazing bars, mullions or building features less than 40 mm in width project more than 40 mm but not greater than 250 mm from the opening infill surface, sprinklers may be positioned directly in front of the bar or mullion, provided —
- (i) a minimum clearance of 50 mm from the centre of the sprinkler to the external face of the mullion is provided; and
 - (ii) a maximum distance from the opening infill surface is not exceeded, as specified in [Clause 2.5.4](#).

2.5.4 Location

Unless specifically listed otherwise, vertical sidewall pendent or upright (spray towards infill) sprinklers shall be located —

- (a) not less than 150 mm and not greater than 200 mm from the top of protected infill, measured from the sprinkler deflector; and
- (b) not less than 150 mm and not greater than 300 mm from the face of protected infill, measured from the centre of the sprinkler.

as shown in [Figure 2.3](#).

2.6 Obstructions

Canopies, awnings, solar screens and similar device shall be taken into account in locating sprinklers to ensure that direct impingement of water on the opening infill is not obstructed.

2.7 Special window sprinklers

Special window sprinklers listed for the application shall be designed and installed in accordance with the manufacturer's data sheets.

2.8 Detectors

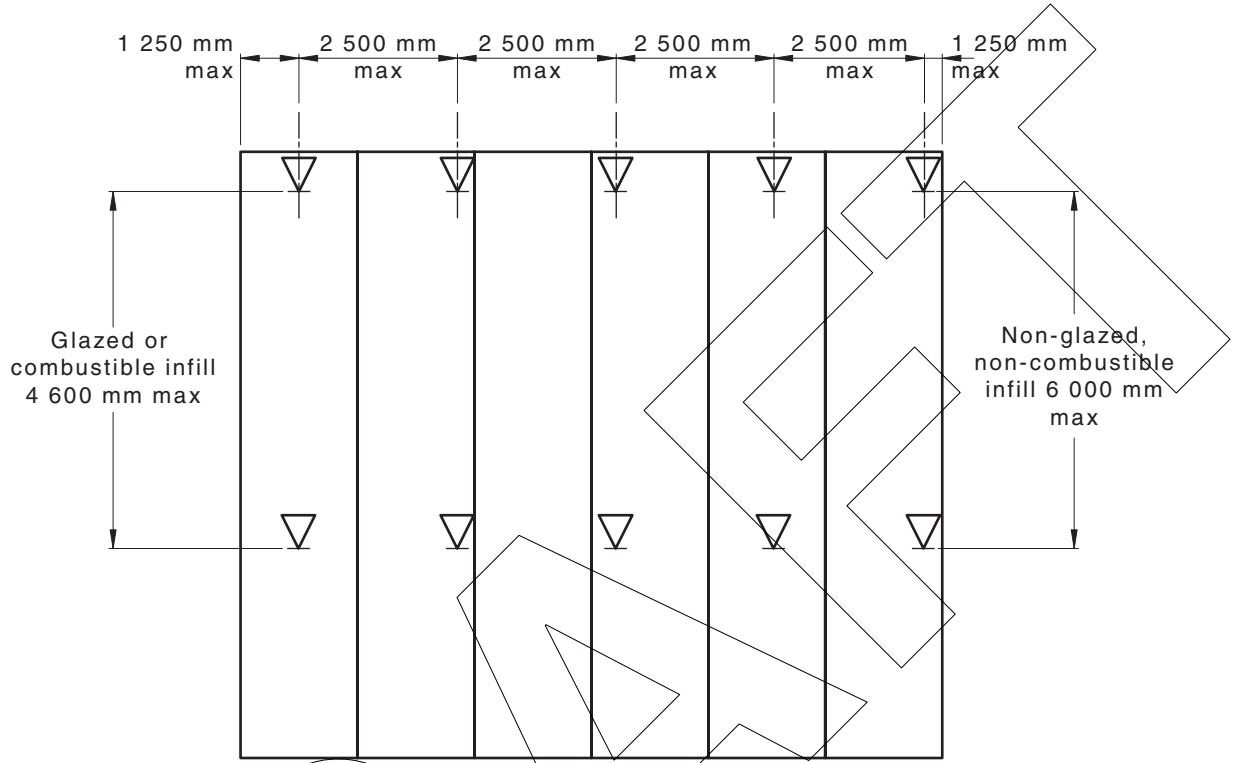
Where a system of heat detectors is utilized, the detector shall be located within 300 mm of each open sprinkler.

2.9 Shielding

Sealed sprinklers shall be protected from the effects of water discharging from sprinklers at a higher level by —

- (a) locating the sprinklers under eaves or other building features; or
- (b) fitting a flat corrosion-resistant metal shield not less than 80 mm, and not greater than 100 mm in diameter or square, immediately above each sprinkler.

C2.9 The use of “heat collector plates” as a device for assisting sprinkler activation has been shown in fire tests to be of no value or even detrimental to sprinkler operation.



C = 4600 mm for glazed or combustible infill; and 6000 mm for non glazed non combustible infill.

Figure 2.1 — Spacing of sprinklers for vertical glazing bars or mullions less than 40 mm in width projecting less than 40 mm from the opening infill surface

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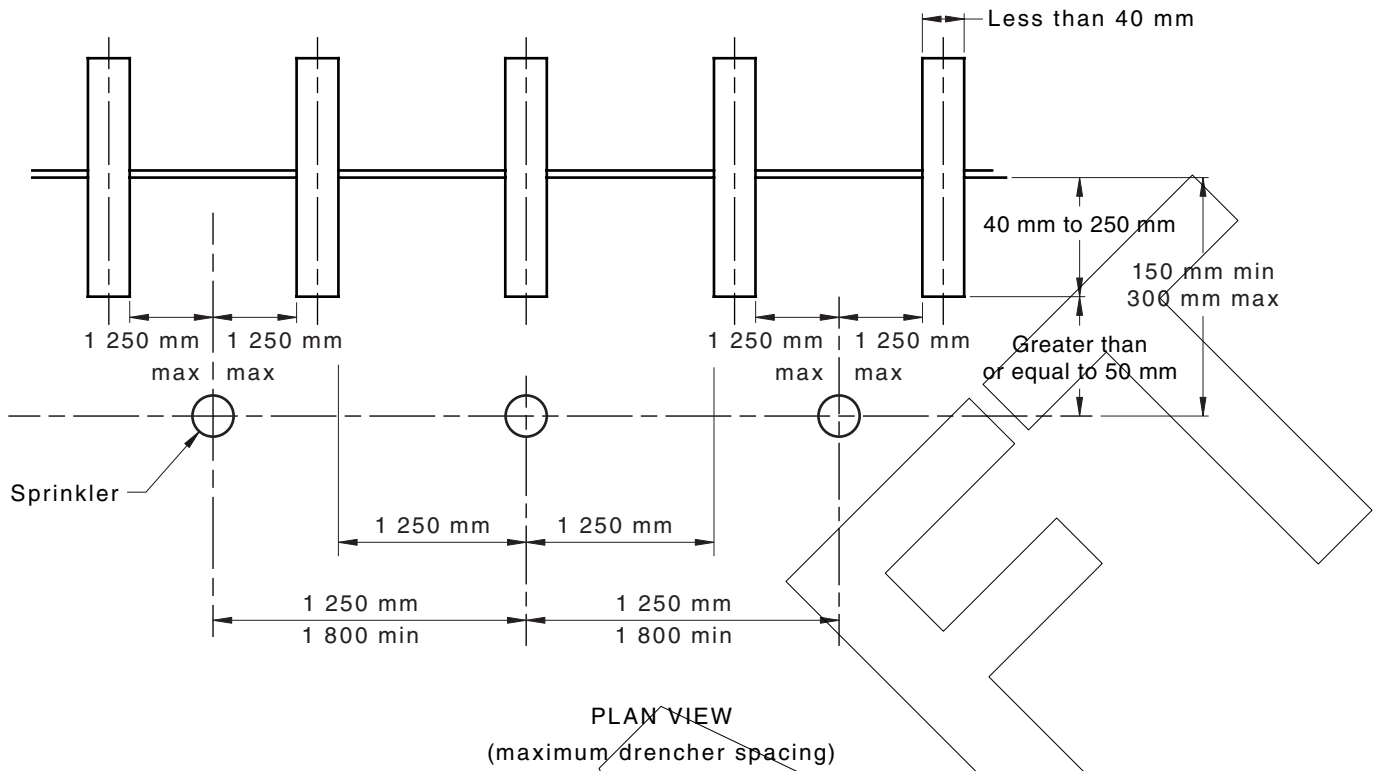


Figure 2.2(A) — Spacing of sprinklers for vertical glazing bars or mullions less than 40 mm in width projecting more than 40 mm but not greater than 250 mm from the opening infill surface

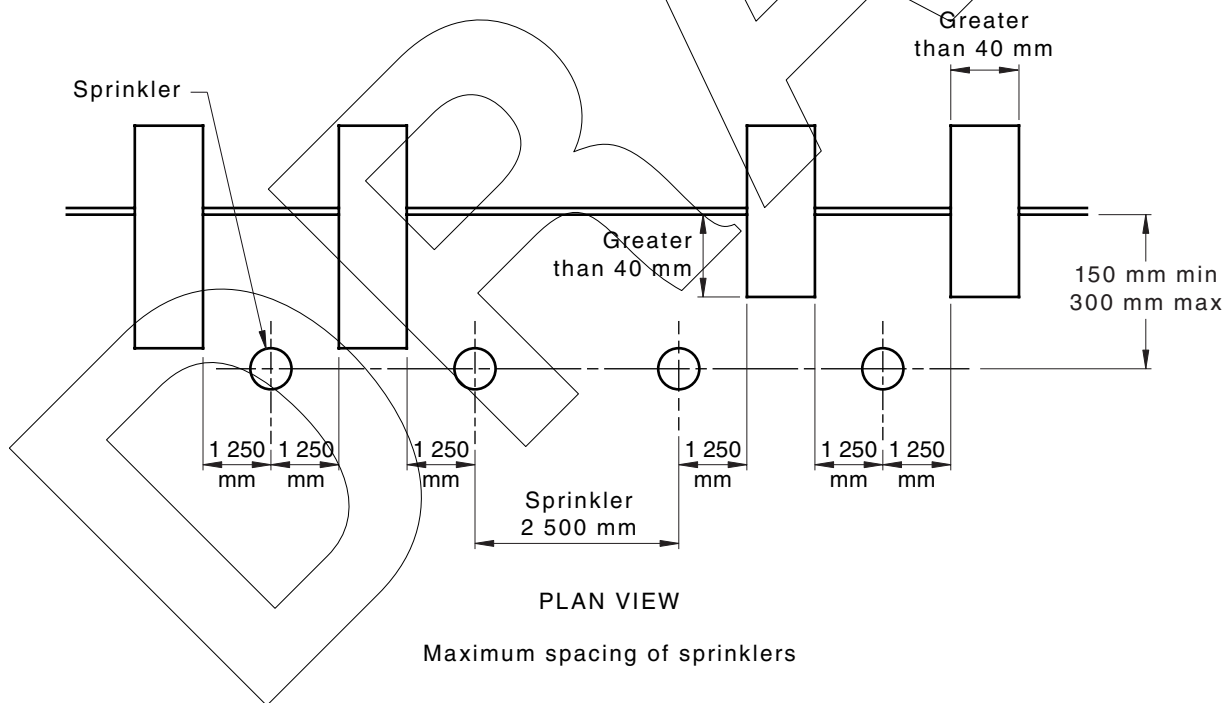


Figure 2.2(B) — Spacing of sprinklers for opening infills having mullions more than 40 mm wide and projecting more than 40 mm from protected surface

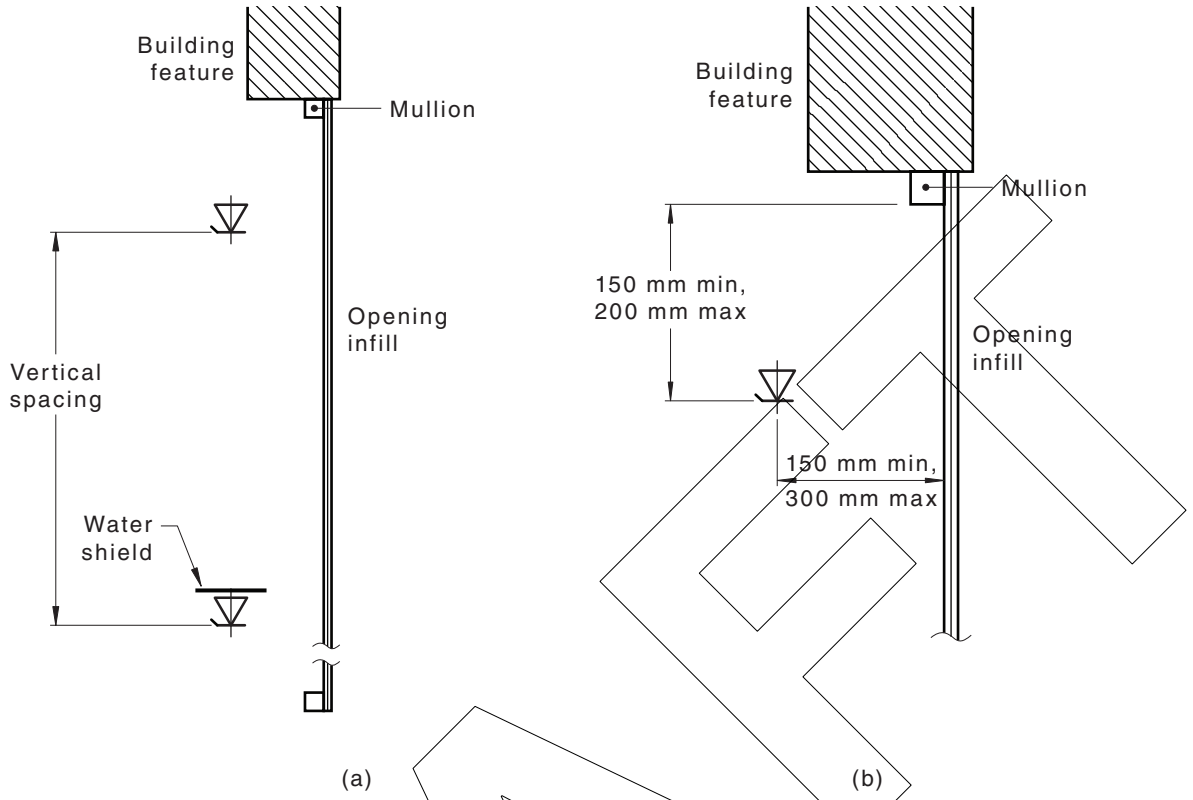


Figure 2.3 — Orientation and location of sprinklers for glazing or infill opening

Section 3 Water supplies

3.1 General

A wall wetting sprinkler system shall be supplied from at least one of the following water supplies:

- (a) A fire hydrant system installed in accordance with the requirements of AS 2419.1.
- (b) A dedicated water supply conforming to the acceptable water supplies in AS 2118.1:2017.
- (c) A fire sprinkler system installed in accordance with the requirements of AS 2118.1:2017 only where wall wetting sprinklers are required for the non-sprinkler protected part of the building or

NOTE For the internal sprinkler protected part of the building, the wall wetting sprinkler system, where required by the NCC, should conform to AS 2118.1:2017.

- (d) An onsite domestic supply installed in accordance with AS/NZS 3500.1.

3.2 Simultaneous demand

The following requirements apply:

- (a) For wall wetting sprinklers installed to provide protection from a fire source feature on an adjacent allotment —
 - (i) the water supply shall be capable of providing for the demand of the wall wetting sprinklers where connected to a water supply in accordance with [Clause 3.1\(a\)](#), [3.1\(b\)](#) or [3.1\(c\)](#); or
 - (ii) the water supply shall be capable of providing for the demand of the wall wetting sprinklers and the probable simultaneous demand in accordance with AS/NZS 3500.1 where connected to a water supply in accordance with [Clause 3.1\(d\)](#).
- (b) For wall wetting sprinklers installed to provide protection from a fire source feature on the same allotment —
 - (i) the water supply shall be capable of providing for the simultaneous demand of the wall wetting sprinklers and the demand of the fire hydrant system when installed in accordance with [Clause 3.1\(a\)](#) or [3.1\(b\)](#);
 - (ii) the water supply shall be capable of providing for the demand of the wall wetting sprinklers or the demand of the AS 2118.1:2017 internal sprinklers when installed in accordance with [Clause 3.1\(c\)](#), whichever is the greater, and the demand of the fire hydrant system; or
 - (iii) the water supply shall be capable of providing for the demand of the wall wetting sprinklers and the probable simultaneous demand in accordance with AS/NZS 3500.1 where connected to a water supply in accordance with [Clause 3.1\(d\)](#) and the demand of the fire hydrant system.
- (c) For wall wetting sprinklers installed to provide protection to a path of travel —
 - (i) the water supply shall be capable of providing for the simultaneous demand of the wall wetting sprinklers and the demand of the fire hydrant system when installed in accordance with [Clause 3.1\(a\)](#) or [3.1\(b\)](#);
 - (ii) the water supply shall be capable of providing for the demand of the wall wetting sprinklers or the demand of the AS 2118.1:2017 internal sprinklers when installed in accordance with [Clause 3.1\(c\)](#), whichever is the greater, and the demand of the fire hydrant system; or

- (iii) the water supply shall be capable of providing for the demand of the wall wetting sprinklers, the probable simultaneous demand in accordance with AS/NZS 3500.1 where connected to a water supply in accordance with [Clause 3.1\(d\)](#) and the demand of the fire hydrant system.

3.3 Where the fire source feature is from an adjacent allotment, it is considered that the subject building does not require the use of other installed fire systems. Where the fire source feature is within the subject allotment, it is considered that other installed fire systems for that allotment will be utilized. In both cases however, if the water supply is from an onsite domestic water supply, then the probable simultaneous demand will be included.

3.3 Connections to water supplies

Connections to water supplies shall be in accordance with the following:

- (a) Where a wall wetting sprinkler system is connected to a fire hydrant system as detailed in [Clause 3.1\(a\)](#) —
- (i) an above-ground isolating valve, locked in the open position, shall be located on the wall wetting sprinkler pipework adjacent to the point of connection to the hydrant system; and
 - (ii) where a fire hydrant booster assembly is installed, the connection shall be downstream of the booster inlets.
- (b) Where a wall wetting sprinkler system is connected to a dedicated water supply as detailed in [Clause 3.1\(b\)](#), an above-ground isolating valve, locked in the open position, shall be located near the front boundary.
- (c) Where a wall wetting sprinkler system is connected to a fire sprinkler system as detailed in [Clause 3.1\(c\)](#):
- (i) an above-ground isolating valve, locked in the open position, shall be located on the wall wetting sprinkler pipework adjacent to the point of connection(s) to the sprinkler system; except that the monitoring requirements of AS 2118.1:2017 Clause 8.2.4(a) do not apply; and
 - (ii) where a fire sprinkler booster assembly is installed, the connection shall be downstream of the booster inlets.
- (d) Where a wall wetting sprinkler system is connected to an onsite domestic supply as detailed in [Clause 3.1\(d\)](#) —
- (i) the connection shall be made between the main site isolating valve and the site water meter;
 - (ii) the dedicated wall wetting sprinkler supply pipework shall be provided with backflow prevention and above-ground isolating valves, locked in the open position, in accordance with the requirements of AS/NZS 3500.1; and
 - (iii) where a booster assembly is required by [Clause 3.6](#), it shall be installed downstream of the backflow prevention assembly.

3.4 Demand exceeds supply

Where the required demand for the water supply exceeds that of the available reticulated town main (95 percentile) the following shall apply:

- (a) Where the installation of a pump is required and provides pressure to —
- (i) the wall wetting sprinklers only, a single electric or diesel pump conforming to the residential pump section of AS 2941 shall be provided; or
 - (ii) the wall wetting sprinklers and other required onsite fire systems such as sprinklers or hydrants, the pump(s) shall conform to the requirements of those system(s) standards.
- (b) Where the installation of a water storage tank is required and provides flow and duration to —
- (i) the wall wetting sprinklers only, a single water storage tank in accordance with AS 2304, with a capacity for a minimum duration of 60 min, or a duration equivalent to that of the FRL of the protected building element in accordance with the NCC, whichever is the greater, shall be provided; or
 - (ii) both wall wetting sprinklers and other required onsite fire systems such as sprinklers or hydrants, the tank(s) shall conform to the requirements of those system(s) standards with the capacity detailed in Item (b)(i) added to the volume of the tank.
- (c) Where a residential pump is installed in accordance with Items (a)(i) and (b)(i) a “pump running” visual and audible alarm shall be provided in a location that is visible and audible from the main entry of the building. A permanently affixed fade resistant sign having capital letters of not less than 15 mm in a colour contrasting with the background and stating “WALL WETTING PUMP RUNNING” shall be provided adjacent to the alarm indicators.

NOTE The tank size for 60 min duration aligns with the FRL requirements for infills in the NCC.

3.5 Fire brigade booster connection

Where more than 12 wall wetting sprinklers are located on any one facade of the building, or a fixed onsite pump or tank is required to be installed; a fire brigade booster assembly conforming to AS 2419.1 shall be provided, except that —

- (a) where the building is sprinkler protected throughout, the FRL protection requirements of AS2419.1 for the booster assembly do not have to be applied;
 - (b) where the fixed onsite pump is installed in series and serves sprinklers only, the requirements to provide a 150 mm liquid filled pressure gauge and associated warning sign do not have to be applied; and
- Note A pump bypass is still required to be provided.
- (c) where the demand of the wall wetting sprinklers is less than 10 L/s, the requirement to provide not less than two boost inlets does not have to be applied.

Where it is proposed to connect a wall wetting sprinkler system to a fire hydrant system in accordance with [Clause 3.1\(a\)](#) or a sprinkler system in accordance with [Clause 3.1\(c\)](#) that already requires a fire brigade booster assembly, the number of feed fire hydrants and/or large bore suction connections and the number of boost inlets provided shall allow for the boosting of the system(s) demand in accordance with [Clause 3.3](#).

3.6 Test and boost pressure signage

Test and boost pressure signage shall be provided in accordance with the requirements of AS 2419.1.

Section 4 System installation, components piping and baseline data

4.1 General

The installation of a wall wetting sprinkler shall be in accordance with the following:

- (a) Where a wall wetting sprinkler system is connected to a fire hydrant system, components including piping, valves and ancillary equipment shall be arranged in accordance with and conform to AS 2419.1, as applicable, and shall be protected against corrosion.
- (b) Where a wall wetting sprinkler system is connected to a dedicated water supply or a fire sprinkler system, in accordance with AS 2118.1:2017, components including piping, valves and ancillary equipment shall be arranged in accordance with and conform to AS 2118.1:2017, as applicable.
- (c) Where a wall wetting sprinkler system is connected to an onsite domestic water supply, components including piping, valves and ancillary equipment shall be arranged in accordance with, and conform to AS 2118.1:2017 downstream of the backflow prevention assembly and AS/NZS 3500.1 upstream of and including the backflow prevention assembly, as applicable.

C4.1 When installing external wall wetting sprinkler systems, consideration should be given to access for maintenance, susceptibility to damage, and the long-term deterioration of components due to weathering.

4.2 System arrangements

4.2.1 Wall wetting sprinkler systems piping and valves

4.2.1.1 Wet system

Wall wetting system sprinklers installed as wet systems shall conform to the following:

- (a) The arrangement shall include a distribution main or mains serving all storeys and be provided with an isolation valve (secured in the open position by a padlocked chain) in an accessible and visible location.
- (b) For the purposes of commissioning and periodic testing, a remote test valve shall be provided. The remote test valve piping shall be not less than DN 25 and shall be taken from the end of a range pipe in the most remote group of wall wetting sprinklers on the installation.
- (c) The test pipe shall terminate in a smooth bore, corrosion-resistant orifice, giving a flow equivalent to the orifice of the sprinklers. If the remote test valve assembly terminates inside the building, a permanent waste drain with tundish shall be provided so that the discharge can be observed and sampled.
- (d) The remote test valve shall be readily accessible, locked shut.
- (e) A permanently affixed fade and weather resistant sign having capital letters of not less than 10 mm high stating "WALL WETTING SPRINKLER", "REMOTE TEST VALVE" and "TO BE LOCKED SHUT" in a colour contrasting with the background shall be provided (see [Figure 4.1](#)).

4.2.1.2 Dry systems

Wall wetting sprinkler system components and piping arrangement for dry systems shall be installed in accordance with AS 2118.1:2017.

**WALL WETTING SPRINKLER
REMOTE TEST VALVE
TO BE LOCKED SHUT**

Figure 4.1 — Signage label wording

4.2.2 Proving of water supply

Facilities shall be provided to test the water supply to verify that it satisfies the calculated flow and pressure requirements of the installed wall wetting sprinkler system.

The water testing facility shall be in accordance with the following:

- (a) For systems connected to an AS 2118.1:2017 water supply
 - (i) a flow measuring device shall be installed at any point downstream of the datum point to which the hydraulic calculations are referenced; or
 - (ii) a portable flow measuring device, capable of measuring the full wall wetting sprinkler system design demand device, shall be attached to a hydrant within 10 m of the wall wetting system town main connection.
- (b) For systems requiring a residential pump conforming to AS 2941, a flow measuring device in accordance with AS 2941 shall be installed.
- (c) For systems connected to an onsite domestic water supply, a flow measuring device shall be installed at any point downstream of the backflow prevention assembly to which the hydraulic calculations are referenced to.

For systems connected to an AS 2419.1 hydrant system, AS 2118.1:2017, AS 2118.4, AS 2118.6 or FPAA101H sprinkler system, the flow test facilities on the hydrant system or sprinkler system may be utilized, provided they are sized to test the wall wetting system design demand or simultaneous demand where required.

4.2.3 Signage (baseline data)

A permanently affixed fade and weather resistant sign having capital letters of not less than 25 mm high stating "FIRE SERVICE VALVE" and in capital letters of not less than 15 mm high stating "CLOSE ONLY TO ISOLATE" and "WALL WETTING SPRINKLERS" in a colour contrasting with the background shall be provided (see [Figure 4.2](#)).

**FIRE SERVICE VALVE
CLOSE ONLY TO ISOLATE
WALL WETTING SPRINKLERS**

Figure 4.2 — Wall wetting sprinkler isolation valve label wording

4.2.4 Block plan (baseline data)

A permanently affixed, fade and weather resistant plan of the protected building(s) (block plan), minimum size A3, shall be located adjacent to the fire brigade booster assembly (if provided) or within or adjacent to the main entry of the building.

Where a wall wetting system is connected to either a fire hydrant system or fire sprinkler system, the listed items detailed below shall be incorporated in either —

- (a) the required block plan for the system to which it is connected; or
- (b) a separate block plan for the wall wetting system.

The following information shall be included in the block plan:

- (i) The layout of the protected buildings or areas, property boundaries, adjacent streets and location of wall wetting sprinkler protected facades.
- (ii) A diagram of water supplies including (if applicable) —
 - (A) the location of the wall wetting sprinklers;
 - (B) sizes, locations and identifier of water supply piping and isolation valves(s); subsidiary and test valves;
 - (C) for dry systems, the location of flow control assemblies and control and indicating equipment (CIE);
 - (D) supply authority mains;
 - (E) location of booster connection;
 - (F) location and capacity of fire water storage tanks;
 - (G) location of pumps and the pump duties;
 - (H) the water agency flow and pressure details upon which the design is based;
 - (I) connections to onsite domestic water supplies; and
 - (J) location of the main switchboard for the fire pump.
- (iii) Details of the design number of sprinklers and the design required flow(s) and pressure(s).
- (iv) The name of the installer.
- (v) The year of installation of the system.

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Section 5 Commissioning

5.1 General

The tests detailed in this Section shall be conducted at commissioning.

5.2 Pre-test preparation

5.2.1 General

All required signs, plans, padlocks, chains and any required onsite documentation shall be completed.

5.2.2 Flushing

Upon completion of the pre-test preparation, the wall wetting sprinkler system shall be flushed to remove any debris that may have accumulated within the pipework during construction of the installation.

5.3 Hydrostatic test

The piping system shall be pressurized at the elevation of the highest wall wetting sprinkler to the required pressure as follows:

- (a) Where connected to a fire hydrant system, hydrostatic testing shall conform to the requirements of AS 2419.1.
- (b) Where connected to a fire sprinkler system, hydrostatic testing shall conform to the requirements of AS 2118.1:2017.
- (c) Where connected to a domestic system (either drinking water or recycled water) hydrostatic testing shall conform to the requirements of AS/NZS 3500.1.
- (d) Where connected to an onsite water supply storage tank, test pressure shall be not less than 1.5 times the highest working pressure or 1500 kPa, whichever is the greater, for a duration of not less than 30 min.

5.4 Flow test

A flow test shall be carried out to prove that the water supply is capable of meeting the required flow and pressure.

5.5 Recording of test results

Test results shall be recorded on a completion certificate.

NOTE An example of a sprinkler system completion certificate is given in [Appendix A](#).

5.6 Inspection, testing and maintenance

The inspection, testing and maintenance of wall wetting sprinkler systems shall be in accordance with AS 1851 with the following exceptions:

- (a) Where a wall wetting sprinkler system is connected directly to a hydrant system, the isolating valve and auxiliary valves shall be checked on the hydrant system frequency.
- (b) Where a wall wetting sprinkler system is connected to a town main or an onsite domestic system without a booster connection, the isolating valve and any auxiliary valves, when padlocked open, need only be checked on a 6-month frequency.

Appendix A (informative)

Example of wall wetting sprinkler system completion certificate

WALL WETTING SPRINKLER SYSTEM COMPLETION CERTIFICATE

Name of installer:

Address and contact details:

hereby certify that we have completed on (date):

A wall wetting sprinkler system designed and installed in accordance with AS 2118.2, Wall Wetting Sprinkler Systems

Name of client:

Address of protected premises:

Premises known as, or occupied by:

Type of system (wet/dry):

Fire Brigade booster installed yes/no:

Water supply connected to:

Hydraulic design documentation provided to:

Block plan provided and located at:

The maximum number of sprinklers assumed to be operating simultaneously:

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Installation No.	Facade or area protected	Number of sprinklers installed	Highest sprinkler m	Water supply source

Installation No.	Water supply design demand requirements		Water supply test results		Pump cut-in kPa (if provided)	
	Flow L/m	Pressure kPa	Flow L/m	Pressure kPa	Required	Results

Full water supply details:

Town Main

- (i) Size:
- (ii) Water authority provide flow and pressure:
- (iii) Connection size, fittings and location:
- (iv) Isolating valve location:
- (v) Booster connection location (if provided):

Hydrant System

- (i) Size of hydrant main:
- (ii) Connection size, fittings and location:
- (iii) Isolating valve location:

Onsite domestic supply

- (i) Size of domestic main:
- (ii) Connection size, fittings and location:
- (iii) Isolating valve location:
- (iv) Simultaneous demand accounted for in hydraulic analysis:

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- (v) Booster connection location (if provided):

Residential Fire pumps (if provided)

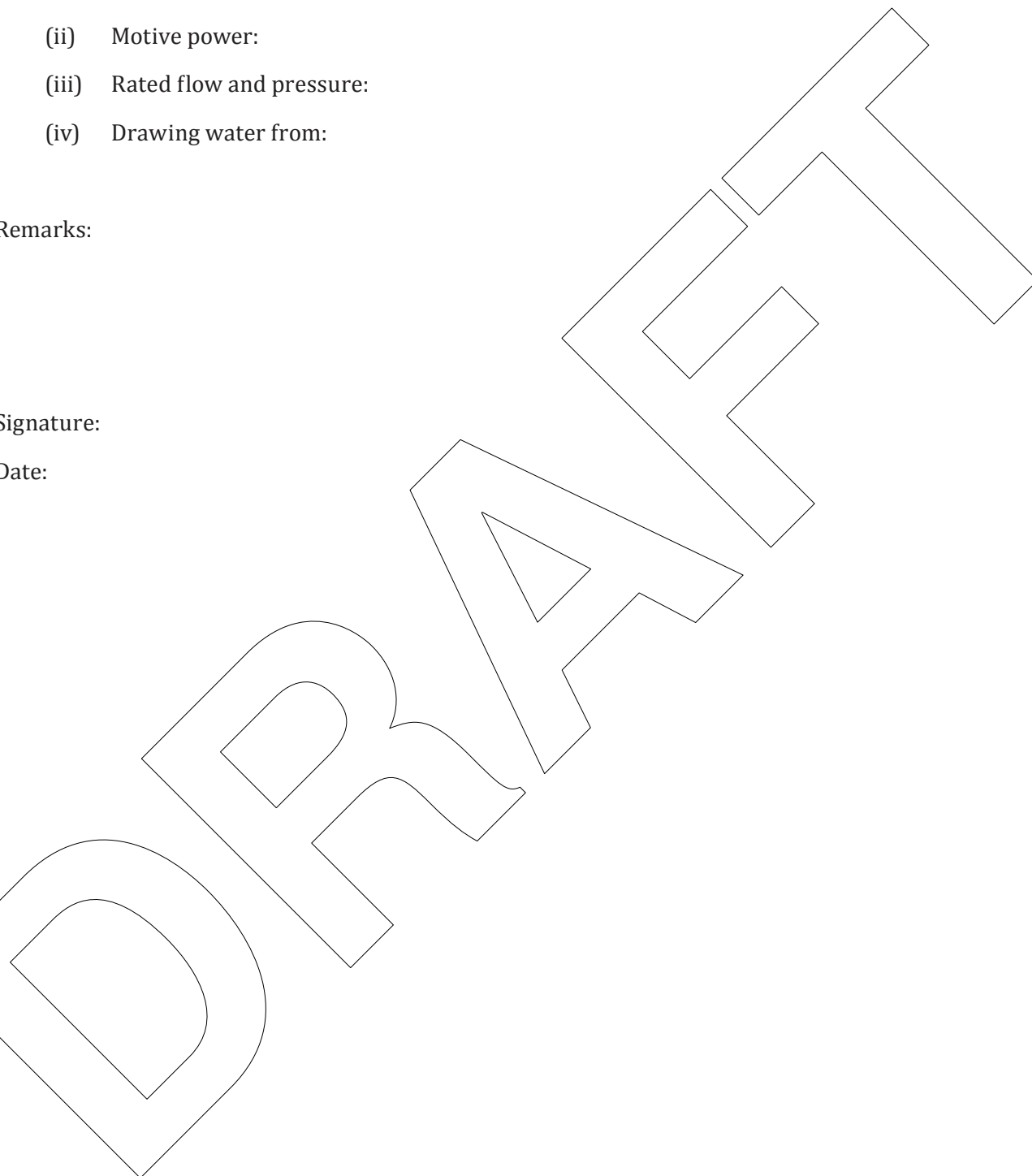
- (i) Manufacturer, model and serial numbers:
- (ii) Motive power:
- (iii) Rated flow and pressure:
- (iv) Drawing water from:

Remarks:

Signature:

Date:

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NOTES

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- Australasian Fire and Emergency Service Authorities Council
- Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Institute of Building Surveyors
- Bulky Goods Retailers Association
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