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STANDARDS Australia

Automatic fire sprinkler systems

Part 6: Combined sprinkler and hydrant systems in multi-storey buildings



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Australian Standard®

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Part 6: Combined sprinkler and hydrant systems in multi-storey buildings

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How to read this Standard

This page explains the meaning of the language and structure of this Standard.

Refer to Standards Australia's Standardisation Guide 006 for more details about drafting rules.

Australian and Australian/New Zealand Standards are voluntary unless they are referenced in legislation or called up in contracts.

Requirements

To conform to a Standard, all requirements in the Standard need to be met.

A requirement is any statement in the Standard which uses the word "shall".

Recommendations, permissions and possibilities

The following words are commonly used in Standards, but statements using them do not have to be followed to conform to the Standard:

(a) "should" means that something is recommended.

(b) "may" means that something is permitted.

(c) "can" means that something is possible.

Structure of Standards

A Standard always has the following parts:

(i) The Preface states who developed the Standard, what the Standard is aiming to do, and how it relates to other documents.

(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

A Standard may also include other parts, such as the following:

(1) A normative appendix sets additional requirements that need to be conformed to.

(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee of FP-004, Automatic Fire Sprinkler Installations, to supersede AS 2118.6:2012, *Automatic fire sprinkler systems, Part 6: Combined sprinkler and hydrant systems*.

The objective of this document is to set out the minimum criteria for the design, installation and commissioning of combined sprinkler and hydrant systems, including fire hose reels where appropriate, in multistorey buildings having a rise in storeys of more than two and an effective height of not more than 135 m.

This edition includes the following changes:

(a) Reflecting recent advances in technology.

(b) Reflecting recent advances to the design approach of combined systems.

(c) Aligning with recent changes in AS 2118.1:2017 and AS 2419.1:2021.

(d) Refine the content for clarity and conciseness.

(e) The scope —

  (i) limits the application of this document to buildings having an effective height of not more than 135 m;

  (ii) provides for pressure zones up to 40 m; and

  (iii) allows for high hazard and special commodities to be included in a combined system subject to specific limitations.

(f) The definition of a control assembly is extended.

(g) A concession from the fire hydrant coverage requirements of AS 2419.1 is provided for fire compartments having a floor area of not more than 250 m^2.

(h) Control assembly arrangements and locations.

(i) The break tank capacity requirements varied from AS 2304.

(j) Automatic air release valves included to safely discharge accumulated air.

(k) Increased flexibility in pump configuration and design.

(l) Pre-calculated water storage tank sizing is provided as a design option for light and ordinary hazard occupancies that do include internal wall wetting or external sprinklers.

The AS 2118 suite of sprinkler Standards has been restructured into two groups: Systems (AS 2118 series) and Component (AS 4118 series). The complete series comprises the following:

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

AS 2118.2, *Automatic fire sprinkler systems, Part 2: Wall Wetting systems*

AS 2118.3, *Automatic fire sprinkler systems, Part 3: Deluge systems*

AS 2118.4, *Automatic fire sprinkler systems, Part 4: Sprinkler protection for accommodation buildings not exceeding four storeys in height*

AS 2118.5, *Automatic fire sprinkler systems, Part 5: Home fire sprinkler systems*

AS 2118.6, *Automatic fire sprinkler systems, Part 6: Combined sprinkler and hydrant systems in multistorey buildings (this Standard)*

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AS 4118.1.1, *Fire sprinkler systems, Part 1.1: Components—Sprinklers and sprayers*

AS 4118.1.2, *Fire sprinkler systems, Part 1.2: Components—Alarm valves (wet)*

AS 4118.1.3, *Fire sprinkler systems, Part 1.3: Components—Water motor alarms*

AS 4118.1.4, *Fire sprinkler systems, Part 1.4: Components—Valve monitors*

AS 4118.1.5, *Fire sprinkler systems, Part 1.5: Components—Deluge and pre-action valves*

AS 4118.1.6, *Fire sprinkler systems, Part 1.6: Components—Stop valves and non-return valves*

AS 4118.1.7, *Fire sprinkler systems, Part 1.7: Components—Alarms valves (dry)*

AS 4118.1.8, *Fire sprinkler systems, Part 1.8: Components—Pressure-reducing valves*

AS 4118.2.1, *Fire sprinkler systems, Part 2.1: Piping—General*

The use of Notes in this Standard is of an advisory nature only to give explanation or guidance to the user on recommended design considerations or technical procedures, or to provide an informative cross-reference to other documents or publications. Notes to clauses in this Standard do not form a mandatory part for compliance with this Standard.

This Standard incorporates commentary on some of the 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 for compliance with the Standard.

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

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Introduction

A combined sprinkler and fire hydrant system (combined system) provides an alternative design approach to the conventional separate fire sprinkler and separate fire hydrant systems specified under AS 2118.1 and AS 2419.1 respectively.

A combined system meeting the requirements of this document differs from the provisions incorporated in AS 2118.1 for a combined water supply and common piping to serve sprinklers and hydrants by permitting a different type of alarm valve, providing for different locations and zoning of those alarm valves, and defining different water supply requirements.

The combined system requirements detailed in this document are intended, for buildings having a rise in storeys of more than two that are substantially light or ordinary hazard occupancies. The combining of water supplies that occurs where an AS 2118.6 *Combined Sprinkler and Hydrant System* is installed potentially increases the effectiveness of the sprinkler system through the ability to operate more sprinkler heads or conversely increases the effectiveness of the sprinkler system through greater sprinkler water discharge, particularly over multiple levels.

This document allows for common water supplies drawn from common water source(s), to supply the simultaneous flow demands of a combined system at the higher pressure required by either system and where installed, a fire hose reel system.

Limitations detailed in this document aim to facilitate the boosting of a combined system by the fire brigade. These limitations include a maximum building height, a maximum combined system flow, and the maximum height of a pressure zone.

New definitions are provided for combined fire main, sprinkler fire main (trunk main), hydrant fire main, feed fire main and water supplies. These definitions have been provided so that normative requirements can be applied to differing component parts of the combined fire main.

Water supply requirements have been clarified. Pre-calculated water storage tank capacities are now included for a combined system that incorporates for Light and Ordinary hazard occupancies. Where internal wall wetting sprinklers or external sprinklers for exposure protection are included in a combined system the pre-calculated water storage tank capacities may need to be increased.

This document is to be read in conjunction with AS 2118.1 and AS 2419.1. Where this document is applied and a difference in normative requirements occurs with either AS 2118.1 or AS 2419.1, the provisions detailed in this document take precedence over those listed in the aforementioned documents.

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Automatic fire sprinkler systems

Part 6: Combined sprinkler and hydrant systems in multi-storey buildings

Section 1 Scope and general

1.1 Scope

This document sets out the minimum criteria for the design, installation, and commissioning of combined systems (including fire hose reels where appropriate) in multistorey buildings having a rise in storeys of more than two and an effective height of not more than 135 m. The criteria detailed is intended for buildings that are primarily ordinary and/or light hazard occupancies and buildings that incorporate limited areas of high hazard occupancy.

This document allows for a common water supply and combined fire main to serve both fire hydrants and control assemblies if the combined system flow does not exceed 80 L/s. Where the sprinkler flow exceeds 50 L/s or it is proposed to incorporate a high hazard occupancy in the design, this sprinkler component is to be separated from the common combined fire main and provided with separate boosting facilities.

NOTE A common design scenario may include a common water supply (tanks and pumps) supplying a combined main that serves the fire hydrant system and an OH2 sprinkler system and a separate main from the common water supply serving a control assembly of a high hazard occupancy. Separate boosting facilities would then be required for both of the mains.

This document provides for pressures zones rationalised to not more than 40 m.

This document restricts hazard classifications more than OH3 Special to a maximum height above the fire brigade booster assembly of 25 m.

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 1074, *Steel tubes and tubulars for ordinary service*

AS 1349, *Bourdon tube pressure and vacuum gauges*

AS 1670.1, *Fire detection, warning control and intercom systems — System design, installation and commissioning, Part 1: Fire*

AS 1670.3, *Fire detection, warning control and intercom systems — System design, installation and commissioning, Part 3: Fire alarm monitoring*

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

AS 2201.2, *Intruder alarm systems, Part 2: Monitoring centres*

AS 2304, *Water storage tanks for fire protection systems*

AS 2419.1, *Fire hydrant installations, Part 1: System design, installation and commissioning*

AS 2441, *Installation of fire hose reels*

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

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