AS 2419.1:2017

Australian STANDARD

Fire hydrant installations

Part 1: System design, installation and commissioning

STANDARDS Australia

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- Association of Hydraulic Services Consultants Australia
- Australasian Fire and Emergency Service Authorities Council
- Australian Building Codes Board
- Australian Chamber of Commerce and Industry
- Australian Fire Safety Practitioner's Accreditation Board
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- Australian Stainless Steel Development Association
- Australian Steel Institute
- Copper Development Centre Australia
- Department of Defence, Australia
- Engineers Australia
- Fire Protection Association Australia
- Insurance Council of Australia
- Plastics Industry Pipe Association of Australia
- Property Council of Australia
- Water Services Association of Australia

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Australian Standard®

Fire hydrant installations

Part 1: System design, installation and commissioning

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PREFACE

This Standard was prepared by the Standards Australia Committee FP-009, Fire Hydrant Installations, to supersede AS 2419.1—2005.

This Standard is part of a series on fire hydrant installation, which is comprised of the following parts:

AS
2419 Fire hydrant installations
2419.1 Part 1: System design, installation and commissioning (this Standard)
2419.2 Part 2: Fire hydrant valves
2419.3 Part 3: Fire brigade booster connections

The objective of this Standard is to specify minimum requirements for the design, installation and commissioning of fire hydrant systems which—

(a) will augment the efficient extinguishment of fire within the boundaries of the site;

(b) can be utilized to minimize fire spread within or between one property or building and another;

(c) can be used by trained firefighting personnel; and

(d) have inlet and outlet connections suitable for use with the local fire brigade's firefighting equipment.

The objective of this edition is to incorporate changes that reflect current practice, and to restructure, refine and expand the content of the Standard to clarify the intent of the normative provisions.

The changes in this revision include the following:

(i) A restructure of the document and content to make it easier to use and to improve its readability.

(ii) Inclusion of informative appendices to clarify the intent of sections and clauses.

(iii) Inclusion of new technologies and industry best practices to enable competitive and cost-effective design and water conservation.

(iv) The separation of the previous Section 8, 'Pipework and valves', into two sections.

(v) Acknowledgment of the life safety benefits of installed sprinkler systems.

(vi) The introduction of a range of provisions for high rise buildings based on internationally applied Standards.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

Notes to the text contain information and guidance. They are not an integral part of the Standard.

Illustrations in this Standard are purely diagrammatic and are intended to show functional requirements only, not methods of construction.

The terms 'normative' and 'informative' have been used in 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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FOREWORD

The availability of fire hydrants is essential to fire protection. Fire hydrants may be used to control the spread of fire, protect neighbouring properties, extinguish an outbreak of fire or extinguish a fire controlled by an automatic fire protection system, such as a sprinkler, gaseous or foam system.

Fire hydrants are installed within properties for use by the fire brigade and other trained personnel. Fire hydrant systems should only be used for firefighting purposes.

In developing a fire hydrant system design, the fire hydrant sytem designer needs to consider how the attending fire brigade will access the installed fire hydrants in the event of a fire. Fire hydrants installed in locations that are not readily accessible to the area they are protecting are fire hydrants that are unlikely to be used in the event of a fire. In this regard the fire hydrant system designer should seek to provide external hydrants to serve the ground floor of a building and then locate internal fire hydrants, in compliant locations, progressively throughout the building.

The application of this design approach will consequently ensure that firefighters are able to enter the building under the protection of a charged line of hose, if required, and readily access fire hydrants as they move throughout the building.

The water supply is a fundamental consideration in the design of a fire hydrant installation and may comprise water from more than one source.

Fire hydrant systems need to be regularly inspected, tested and maintained to ensure continued readiness for use.

The provision of firefighting services across Australia varies greatly between rural and metropolitan areas. Should a fire occur in a large metropolitan area, a vast array of resources and large numbers of personnel can be mobilized if needed. This resource capability is not available, however, in rural and country areas, with many such areas having access to a single pumping appliance and a limited number of personnel. In developing a fire hydrant design, the resources available to the attending fire brigade or fire service need to be considered to ensure the design developed is appropriate.

Fire hydrant systems need to be designed, installed and commissioned by persons who have acquired through training, qualification, experience, or a combination of these, the knowledge and skill enabling them to correctly perform the required tasks.

STANDARDS AUSTRALIA

Australian Standard
Fire hydrant installations

Part 1: System design, installation and commissioning

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for the design, installation, commissioning and testing of fire hydrant installations. It applies to on-site fire hydrant installations, that is, fire hydrant installations used to protect buildings, structures, storage yards, marinas and associated moored vessels, wharves and plant.

Where a street fire hydrant(s) is to be used in lieu of an on-site feed fire hydrant(s), this Standard specifies requirements for its location, available pressure and flow as conditions for its inclusion in the designed fire hydrant installation.

This Standard is not applicable to the design or performance of water agency town mains and street hydrants.

The flow requirements detailed in this Standard, having been based on the floor area or volume of a building, are intended to provide sufficient water to enable firefighting operations to commence at a single location within a building or site. Where a risk assessment of a building or site determines that multiple ignitions or that rapid fire growth and spread is probable, then additional provisions have to be considered for inclusion.

This Standard does not specify requirements for fire hydrant installations in special hazard areas.

NOTES:

1 For guidance on means of demonstrating compliance with this Standard, see Appendix A.

2 For information and guidance on fire hydrant installations in special hazard areas, see Appendix B.

3 In circumstances where this Standard does not apply, the principles detailed in this Standard may be used as guidance for the design of a fire hydrant system in consultation with the relevant stakeholders.

4 Manufacturers making a statement of compliance with this Australian Standard on a product or on packaging or promotional material are advised to ensure that such compliance is capable of being verified.

1.2 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

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

AS	
1074	Steel tubes and tubulars for ordinary service
1275	Metric screw threads for fasteners
1281	Cement mortar lining of steel pipes and fittings
1345	Identification of the contents of pipes, conduits and ducts

AS	
1349	Bourdon tube pressure and vacuum gauges
1432	Copper tubes for plumbing, gasfitting and drainage applications
1530	Methods for fire tests on building materials, components and structures
1530.4	Part 4: Fire-resistance test of elements of construction
1572	Copper and copper alloys—Seamless tubes for engineering purposes
1579	Arc-welded steel pipes and fittings for water and wastewater
1603	Automatic fire detection and alarm systems
1603.11	Part 11: Visual warning devices
1674	Safety in welding and allied processes
1674.1	Part 1: Fire precautions
1769	Welded stainless steel tubes for plumbing applications
2118	Automatic fire sprinkler systems
2118.1	Part 1: General requirements
2118.4	Part 4: Sprinkler protection for accommodation buildings not exceeding four storeys in height
2118.6	Part 6: Combined sprinkler and hydrant systems in multistorey buildings
2304	Water storage tanks for fire protection systems
2419	Fire hydrant installations
2419.2	Part 2: Fire hydrant valves
2419.3	Part 3: Fire brigade booster connections
2484	Fire—Glossary of terms
2484.2	Part 2: Fire protection and firefighting equipment
2941	Fixed fire protection installations—Pumpset systems
3672	Wrought steel threaded pipe fittings
3688	Water supply and gas systems—Metallic fittings and end connectors
3735	Concrete structures retaining liquids
4118	Fire sprinkler systems
4118.1.4	Part 1.4: Components—Valve monitors
4321	Fusion-bonded medium density polyethylene coating and lining for pipes and fittings
4428	Fire detection, warning, control and intercom systems—Control and indicating equipment
4428.1	Part 1: Fire
4728	Electric resistance welded steel pipe for pressure purposes
4794	Non-return valves—Swing check and tilting disc
4809	Copper pipe and fittings—Installation and commissioning
5200	Plumbing and drainage products
5200.053	Part 053: Stainless steel pipes and tubes for pressure applications
AS/NZS	
1167	Welding and brazing—Filler metals
1167.1	Part 1: Filler metal for brazing and braze welding
1477	PVC pipes and fittings for pressure applications

1518 External extruded high-density polyethylene coating system for pipes

1668 The use of ventilation and air conditioning in buildings
1668.1 Part 1: Fire and smoke control in buildings

2032 Installation of PVC pipe systems

2033 Installation of polyethylene pipe systems

2280 Ductile iron pipes and fittings

2312 Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

2638 Gate valves for waterworks purposes (series)

2845 Water supply—Backflow prevention devices
2845.1 Part 1: Materials, design and performance requirements

3500 Plumbing and drainage (series)

3862 External fusion-bonded epoxy coating for steel pipes

4129 Fittings for polyethylene (PE) pipes for pressure applications

4130 Polyethylene (PE) pipes for pressure applications

4158 Thermal-bonded polymeric coatings on valves and fittings for water industry purposes

4441 Oriented PVC (PVC-O) pipes for pressure applications (ISO 16422:2014, MOD)

4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles

4765 Modified PVC (PVC-M) pipes for pressure applications

4792 Hot-dip galvanized (zinc) coatings on ferrous hollow sections, applied by a continuous or a specialized process

ABCB
National Construction Code (NCC)

ASME
B36.19M Stainless steel pipe

ASTM
A53 Standard specification for pipe, steel, black and hot-dipped, zinc-coated, welded and seamless

A106 Standard specification for seamless carbon steel pipe for high-temperature service

A135/A135M Standard specification for electric-resistance-welded steel pipe

A312 Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes

A403 Standard Specification for Wrought Austenitic Stainless Steel Piping Fittings

A795/A795M Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use

1.3 DEFINITIONS

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