Superseded by AS 2419.1-1994

AS 2419.1—1991

Australian Standard®

Fire hydrant installations

Part 1: System design, installation and commissioning

This Australian Standard was prepared by Committee FP/9, Fire Hydrant Installations. It was approved on behalf of the Council of Standards Australia on 9 October 1991 and published on 16 December 1991.

The following interests are represented on Committee FP/9:

Australian Fire Protection Association

Australian Uniform Building Regulations Coordinating Council

N.S.W. Fire Brigade

Board of Works, Melbourne

Building Owners and Managers Association of Australia

Bush Fire Council of New South Wales

Commonwealth Fire Board

Confederation of Australian Industry

Department of Administrative Services

Department of Defence

Department of Transport and Communications

Fire Protection Industry Association of Australia

Institution of Engineers, Australia

Insurance Council of Australia

Metropolitan Fire Brigades Board Melbourne

Water Board Sydney-Illawarra-Blue Mountains

Western Australian Fire Brigades Board

This Standard was issued in draft form for comment as DR 91085.

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First published as AS 2419—1980.
Revised and redesignated AS 2419.1—1988.
Second edition 1991.

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY NSW
ISBN 0 7262 7156 X

PREFACE

This Standard was prepared by the Standards Australia Committee on Fire Hydrant Installations, to supersede AS 2419—1988.

The Standard specifies requirements for the installation within properties of fire hydrants which may, in certain cases, be supplemented by hydrants installed by water supply authorities on street mains.

The changes in this Standard include a revision and expansion of the requirements for hydrant system design and acceptable sources of water supply, water supply capacities, and general revisions to account for advances in technology for materials, methods of installation and firefighting requirements.

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FOREWORD

The purpose of this Standard is to specify a hydrant system which is compatible with the needs of today's fire authorities to extinguish more efficiently the outbreak of fire within premises.

The availability of hydrants is essential to fire protection. Hydrants may be used to quell an initial outbreak of fire, quench a dying fire controlled by an automatic protection system, or provide the sole firefighting facility, e.g. after other means have been unsuccessful.

Although hydrants are installed within properties for use by the fire authority, they may also be used by trained personnel.

An adequate source of water is a fundamental consideration in the design of a fire hydrant installation. This supply must be available at all times, but may comprise water from more than one source. A source based on a 4 h duration at the flow rates given in this Standard is regarded as the minimum safe quantity to enable fire brigades to extinguish a major fire and, if necessary, protect neighbouring properties.

Hydrant systems should also be regularly inspected, tested, and maintained to ensure continued readiness for use. Where pumpsets are installed, regular maintenance is essential.

STANDARDS AUSTRALIA

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard sets out requirements for the design, installation, and commissioning of fire hydrant systems within properties.

NOTE: A commentary written in an advisory manner has been added to this Standard and includes charts for fire nozzle discharge calculations and pressure losses in fire hose. Appendix A sets out a flow chart for water supply system design and Appendix B provides guidance on fire hydrant installations for special hazards.

Requirements for maintenance of fire hydrant installations are given in AS 1851.4.

1.2 REFERENCED DOCUMENTS A list of the documents referred to in this Standard is given in Appendix C.

1.3 DEFINITIONS For the purpose of this Standard, the definitions below apply.

1.3.1 Approved and approval—approved by, or the approval of, a regulatory authority.

1.3.2 Block plan—a plan of the risk clearly indicating the as-constructed location of all mains, isolating valves and hydrants.

1.3.3 Design pressure—the working pressure plus any increase in pressures incurred when the hydrant is closed, e.g. pump running no-flow condition.

1.3.4 Fire brigade booster connection—a connecting device enabling the fire brigade to pressurize or pump water into a fire hydrant system.

1.3.5 Fire compartment—a volume which is enclosed by a fire-rated construction.

1.3.6 Fire hydrant—an assembly installed in a water pipeline which provides a valved outlet to permit a controlled supply of water to be taken from the pipeline for firefighting.

1.3.7 Fire-resistance level (FRL)—the fire-resistance rating periods in minutes, determined for—

(a) structural adequacy,

(b) integrity, and

(c) insulation,

expressed in that order, i.e. FRL XX/ YY/ ZZ.

1.3.8 High-rise installation—a fire hydrant installation in a building where the floor of the topmost storey, excluding a storey containing only heating, ventilation, lifts, water tanks, or similar service equipment, is more than 25 m above the floor of the lowest storey providing egress by a normal route to a road or open area.

1.3.9 Hydrant valve—a valve controlling flow of water from the fire hydrant outlet with provision for attachment of a fire hose.

1.3.10 Low-rise installation—a fire hydrant installation in a single or multistorey building other than a high-rise structure.

1.3.11 Regulatory authority—a Minister of the Crown, a government department or other public authority having power to issue regulations, orders, or other instructions having the force of law in respect of any subject covered by this Standard.

NOTE: There may be one or more regulatory authorities for any particular installation, or even for some aspect of it. Fire authorities have the necessary expertise to assist the regulatory authority in interpreting and applying the requirements of this Standard.

1.3.12 Relay—a firefighting term to denote that pumps are connected in series.

1.3.13 Residual pressure—water pressure available at a hydrant outlet at a particular flow rate.

1.3.14 Suction connection—a large diameter connection often used on water supply tanks where the residual pressure is within the range of −30 kPa and 150 kPa.

1.3.15 Test pressure—not less than 1700 kPa or 1.5 times the design pressure, whichever is the greater.