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VALVES, WATER GAUGES AND OTHER FITTINGS

FOR BOILERS AND UNFIRED PRESSURE VESSELS

STANDARDS ASSOCIATION OF AUSTRALIA
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Aluminium Development Council
Australasian Institute of Metals
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Australian Compressed Air Institute
Australian Institute of Energy
Australian Institute of Non-destructive Testing
Australian Institute of Petroleum Limited
Australian Liquefied Petroleum Gas Association
Australian Mines and Metals Association (Incorporated)
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Australian Valve Manufacturers Association
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Boiler and Pressure Vessel Manufacturers Associat. n o Australia
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Society of Mechanical Engineers of Australia

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AUSTRALIAN STANDARD

VALVES, WATER GAUGES AND OTHER FITTINGS

FOR BOILERS AND UNFIRED PRESSURE VESSELS

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PREFACE

This edition of this standard was prepared by the Association's Committee on Boilers and Unfired Pressure Vessels, to supersede AS 1271—1973.

This standard forms part of the SAA Boiler Code, which is referenced as AS 1200 and is referred to in Statutory Authority regulations within Australia. The SAA Boiler Code covers requirements for water-tube, fire-tube, shell and miscellaneous boilers, unfired pressure vessels, piping, certification of welders and related matters.

The standard was first published in 1964 as AS B190 which was in essence an auxiliary standard for the boilers and unfired pressure vessels standards. Revisions and additions contained in the one published amendment to the 1973 edition, together with subsequent revisions and additions approved by the committee, have been included in this edition. The changes include editorial modifications to align with SAA practice and a number of technical amendments.

The requirements for hydrostatic testing have been revised and a new appendix for safety requirements for pneumatic pressure testing has been added.

Reference to superheated steam in safety valve formulas for discharge capacity has been deleted since it was considered that the required and achievable performance of the valve on superheat should be a matter for the boiler designer.

The standard incorporates the requirements of ISO 4126, Safety Valves—General Requirements, where the committee considered these requirements to be appropriate.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

VALVES, WATER GAUGES AND OTHER FITTINGS FOR BOILERS AND UNFIRED PRESSURE VESSELS

FOREWORD

This standard does not prohibit the use of materials or methods of design or construction which are not specifically referred to herein. Therefore, its application may give rise to a continual need for consideration of unusual and other designs which do not comply in all respects with the requirements of this standard or which are not immediately covered by it or other standards.

Where it is desired to use materials or methods of design or construction which do not comply with the requirements of, or are not immediately covered by this standard, designs incorporating such departure should be submitted to the relevant inspecting authority for approval. Where necessary, SAA Committee ME/1, Boilers and Unfired Pressure Vessels, may be asked to serve in an advisory capacity in the examination of the suitability of such design.

In addition, where ambiguity is found, or where doubt arises as to the meaning or effect of requirements of the standard, or whether anything ought to be done or not done in order to comply fully with this standard, the question should be referred to SAA Committee ME/1 for an interpretation of the intent of the particular requirements of the standard.

It is emphasized that the abovementioned activities of the committee are limited to technical aspects of the standard and that the committee has no power or jurisdiction to adjudicate upon contractual or regulatory matters or the duties of persons concerned with the subject of the submission.

A method developed by Committee ME/1 for communicating the findings of the committee is by the use of Rulings. A Ruling is issued in reply to a specific inquiry from a specific organization and applies only to the set of circumstances referenced in the Ruling. Copies of Rulings are sent to the relevant inspecting authorities and may be used by the authorities as the basis for approval of the practical application or for approval of similar submission from other organizations.

Where the committee judges the subject to be suitable, Rulings may be incorporated in an Amendment to the relevant standard, whereupon the Ruling will be withdrawn. If the timing is appropriate, the finding of the committee may be issued directly as an Amendment.

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for the design, construction and testing of safety valves, liquid relief valves, water level gauges, blowdown valves, high and low level alarms, automatic level controls and other fittings for use in boilers and unfired pressure vessels (see Clause 1.4.1).

It does not deal with the selection, operation, or application of valves and fittings, such provisions being dealt with in the standard applying to the equipment, to which the valves and fittings are to be connected, e.g. AS 1210, nor does it include requirements relating to safety fittings of a class or kind that are already the subject of a relevant standard, e.g.—

Bourdon tube pressure and vacuum gauges ..... AS 1349
Bursting discs ..... AS 1358
Fusible plugs for boilers ..... AS 1732
Bursting discs and bursting disc assemblies ..... BS 2915.

1.2 APPLICATION. Each fitting shall comply with the requirements of Section 2, and with the requirements of other Sections as appropriate.

1.3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1000	The International System of Units (SI) and Its Application
AS 1051	Glossary of Terms for Valves and Valve Parts (for Fluids)
AS 1135	SAA Non-ferrous Pressure Piping Code
AS 1200	SAA Boiler Code
AS 1210	SAA Unfired Pressure Vessel Code
AS 1228	Water-tube Boilers
AS 1722	Pipe Threads of Whitworth Form Part 1—Sealing Pipe Threads
AS 1797	Fire-tube, Shell and Miscellaneous Boilers
AS 2129	Flanges for Pipes, Valves and Fittings
AS 2528	Bolts, Studbolts and Nuts for Flanges and Other High and Low Temperature Applications
AS CB1	SAA Pipe Welding Code Part III—Arc Welding of Ferritic Steel Piping
ANSI B16.5	Steel Pipe Flanges and Flange Fittings
BS 1726	Guide to the Design and Specification of Coil Springs Part 1—Helical Compression Springs
BS 1952	Copper Alloy Gate Valves for General Purposes
BS 1953	Copper Alloy Check Valves for General Purposes
BS 2995	Cast and Forged Steel Wedge Gate, Globe, Check and Plug Valves, Screwed and Socket-welding, Sizes 2 in and Smaller, for the Petroleum Industry
BS 3463	Observation and Gauge Glasses for Pressure Vessels
BS 3799	Steel Pipe Fittings, Screwed and Socket-welding for the Petroleum Industry
BS 5154	Copper Alloy Globe, Globe Stop and Check, Check, and Gate Valves for General Purposes

The reference applies to the current edition of the standard and as amended, unless otherwise agreed by the parties concerned.

1.4 DEFINITIONS. For the purpose of this standard, the definitions given in AS 1051, together with the following, apply:

1.4.1 Fittings—a valve, gauge, alarm, trap or other accessory which may be subject to the pressure of the equipment to which it is attached, but excluding pipe fittings or components such as bends, tees and similar connections.

NOTE: Throughout this standard, the phrase 'valve(s) and (or) fittings(s)' has been used to embrace the fittings covered by this definition.

1.4.2 Plug cock (cock)—a valve in which the flow is controlled by rotating a ported member. The term valve includes plug cock, cock or ball valve.

1.4.3 Safety valve—a valve which automatically opens to discharge fluid to atmosphere so as to prevent a predetermined safe pressure from being exceeded. It is normally used for compressible fluids which require quick overpressure relief. It is activated by the static pressure at the inlet of the valve.

1.4.4 Relief valve—a valve which automatically opens to discharge fluid to relieve pressure. It is used primarily for non-compressible fluids, i.e. liquids. It is activated by the static pressure at the inlet of the valve.

1.4.5 Set pressure (in relation to safety and relief valve)—the predetermined pressure at which a safety valve under operating conditions commences to lift. It is the gauge pressure measured at the valve inlet at which the pressure forces tending to open the valve for the specified service conditions are in equilibrium with the forces retaining the valve disc on its seat.

1.4.6 Overpressure (in relation to safety and relief valve)—the excess of pressure above the set pressure, reached at the valve inlet during discharge. Unless otherwise stated, overpressure is expressed as a percentage of the set pressure.

1.4.7 Re-seating (in relation to safety and relief valve)—the value of inlet static pressure at which the disc re-establishes contact with the seat, or at which the lift becomes zero.

1.4.8 Blowdown (in relation to safety and relief valves)—the difference between the set pressure and the re-seating pressure.