AS 2473.1—2006
(Incorporating Amendment No. 1)

AS 2473.1—2006

Valves for compressed gas cylinders

Part 1: Specifications, type testing, and manufacturing tests and inspections

This Australian Standard® was prepared by Committee ME-002, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 6 January 2006.
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The following are represented on Committee ME-002:

- Air Conditioning and Refrigeration Wholesalers Association
- Australasian Institute of Engineer Surveyors
- Australia New Zealand Industrial Gas Association
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Liquefied Petroleum Gas Association
- Department for Administrative and Information Services, SA
- Fire Protection Association of Australia
- Institute of Materials Engineering Australasia
- International Association for Natural Gas Vehicles
- Pressure Equipment Association Incorporated
- The Australian Gas Association
- Victorian WorkCover Authority
- Welding Technology Institute of Australia
- WorkCover New South Wales

This Standard was issued in draft form for comment as DR 05354.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Australian Standard®

Valves for compressed gas cylinders

Part 1: Specifications, type testing, and manufacturing tests and inspections

Originally as part of AS B240—1966.
Previous edition part of AS 2473—1996.
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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee ME-002, Gas Cylinders to supersede part of AS 2473—1996, *Valves for compressed gas cylinders (threaded outlet)*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian, rather than an Australian/New Zealand Standard.

This Standard incorporates Amendment No. 1 (October 2020). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

A1 If a Standard is referenced in legislation, the legislative instrument or regulation specifies when the Standard or Amendment comes into effect. Regulatory Authorities have indicated 6 months, following the date of publication, as an appropriate transition period for this Amendment.

The changes in this Amendment introduce a Type 27 outlet to replace the Type 21 (POL) outlet for cylinders less than 25 L water capacity as new cylinders are introduced or existing cylinders are retested. The Type 27 outlet includes additional safety features including a right-hand thread, no gas flow possible until a mating fitting is connected and a thermal fuse which shuts off the gas flow in a fire.

This Standard results from a decision to expand AS 2473—1996 into a suite of Standards for valves for compressed gas cylinders based as much as possible on ISO Standards. This edition of AS 2473 comprises three parts as follows:

Part 1: Specifications, type testing, and manufacturing tests and inspections (this Standard).

Part 2: Outlet connections (threaded and stem (inlet) threads.

Part 3: Outlet connections for medical gases (including pin-indexed yoke connections).

Part 3 was formerly designated as AS 2472 and is largely based on ISO 407. Further parts may be prepared in the future.

This Standard was based on the following principles:

(a) To align as closely as possible with ISO 10297, *Transportable gas cylinders—Cylinder valves—Specification and type testing* and ISO 14246, *Transportable gas cylinders—Gas cylinder valves—Manufacturing tests and inspections,* to allow supply to Australia of cylinder valves designed and tested to ISO Standards, but without excluding alternative options and maintaining an independent, stand alone Australian Standard to allow the incorporation of unique or historical Australian requirements (e.g. safety devices, inlet and outlet connections threads, spindle sizes for key operated valves, and including cross-references as needed to Standards referenced in AS 2030.1, *The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases*, Part 1: *Cylinders for compressed gases other than acetylene*.

(b) To provide a single Standard to cover the design and type testing of valves as well as their manufacturing tests and inspections, basing it as much as possible on the current versions and planned revisions of ISO 10297 and ISO 14246.

(c) To adopt the structure of ISO 10297:2006, making the minimum necessary changes to its Section 4, Valve design requirements, to resolve some inconsistencies and relax considerably its Section 6, Type testing methods to make it performance-oriented instead of rigidly prescriptive.

In following closely the structure and content of ISO 10297 (see Sections 2 and 4 of this Part) and ISO 14246 (see Section 3 of this Part), this Standard expands greatly the requirements for the specification and testing of cylinder valves in AS 2473—1996 whilst retaining its core concepts. This Standard follows ISO 10297 with the following departures and changes:

(i) Definitions of test pressures have been clarified and expanded to make them consistent with AS 2030.1.

(ii) Requirements for manufacturing tests and inspections have been incorporated into the text, as they are in AS 2473—1996.

(iii) Relationship with ISO 11117, *Gas cylinders—Valve protection caps and valve guards for industrial and medical gas cylinders—Design construction and tests* has been clarified.

(iv) Requirements for the inlet and outlet connections in AS 2030.1 and AS 2473.2 have been substituted for or expanded on those in ISO 10297.

(v) Resistance to mechanical impact has been brought closer to the new approach in ISO 10297 but following and maintaining the experience gained with AS 2473—1996.

(vi) Requirements for pressure relief devices according to AS 2030.1 and AS 2613, were introduced.

It should be noted that AS 2473.1 modifies some requirements in AS 2473—1996 as indicated above, but AS 2473—1996 can only be withdrawn when AS 2473.2 is issued. Also it should be noted that, as with Australian Standards, ISO Standards are under continuous development. ISO 10297, in particular, is undergoing a long and careful revision and improvement process. Users of this Standard should be aware that revisions to ISO 10297 could introduce additional differences to AS 2473.1 that may be subsequently incorporated by amendment or revision.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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

NOTE THAT FULL COMPLIANCE WITH THIS STANDARD MAY NOT NECESSARILY FULFIL ALL LEGAL OBLIGATIONS.

CONTENTS

Page

Page

APPENDICES

STANDARDS AUSTRALIA

Australian Standard
Valves for compressed gas cylinders

Part 1: Specifications, type testing, and manufacturing tests and inspections

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for valve design, construction and manufacturing, type testing and marking.

This Standard applies to valves intended to be fitted to gas cylinders which convey compressed, liquefied or dissolved gases.

This Standard does not apply to valves for cryogenic equipment, fire extinguishers, or those with self-closing action.

Additional specific requirements for valves fitted with devices, e.g. pressure-reducing, residual pressure-retaining and non-return mechanisms, are not covered by this Standard.

A1 NOTES:

1 Correspondence between this Standard and ISO 10297 is given in Appendix C.

2 Additional requirements for LP Gas cylinder valves are given in Appendix D.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2030 The verification, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases

2030.1 Part 1: Cylinders for compressed gases other than acetylene

2473 Valves for compressed gas cylinders

2473.2 Part 2: Outlet connections (threaded) and stem (inlet) threads

2473.3 Part 3: Outlet connections for medical gases (including pin-indexed yoke connections)

2613 Safety devices for gas cylinders

3840 Pressure regulators for use with medical gases

3840.1 Part 1: Pressure regulators and pressure regulators with flow-metering devices

4955 Transportable gas cylinders—Compatibility of cylinder and valve materials with gas contents

4955.1 Part 1: Metallic materials

4955.2 Part 2: Non-metallic materials (ISO 11114-2:2000, MOD)

4955.3 Part 3: Autogenous ignition test in oxygen atmospheres

ISO

10156 Gases and gas mixtures—Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets

10297 Transportable gas cylinders—Cylinder valves—Specification and type testing

