AS 2472—1996

Australian Standard®

Valves for medical gas cylinders (including pin-indexed outlet)

This Australian Standard was prepared by Committee ME/2, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 14 June 1996 and published on 5 October 1996.

The following interests are represented on Committee ME/2:

Australian Chamber of Commerce and Industry
Australian Chamber of Manufactures
Australian Gas Association
Australian Liquefied Petroleum Gas Association
Boiler and Pressure Vessel Manufacturers
Department of Defence
Department of Industrial Affairs, S.A.
Department of Labour, New Zealand
Department of Minerals and Energy, Qld
Department of Training and Industrial Relations, Qld
Fire Protection Industry Association of Australia
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Institute of Metals and Materials Australasia
Insurance Council of Australia
Tasmania Development and Resources
Telarc New Zealand
Welding Technology Institute of Australia
WorkCover Authority, A.C.T
WorkCover Authority, N.S.W.
Work Health Authority, N.T.
Worksafe Western Australia

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PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee ME/2 on Gas Cylinders to supersede AS 2472—1985, *Valves for medical gas cylinders*. It is the result of a consensus among representatives on the Joint Committee to produce it as an Australian Standard.

Dimensions for the pin-index couplings are taken from the metric range of BS 1319, *Specification for medical gas cylinders, valves and yoke connections*, which in turn generally aligns with ISO 407, *Small medical gas cylinders—Pin-index yoke-type valve connections,* used for anaesthetic and resuscitation purposes, and follows ANSI/CSA/CGA V1:1987, *Compressed Gas Cylinder Valve Outlet and Inlet Connections*. These three Standards differ in minor but noticeable ways in the dimensions of the connections. Although connections made to each Standard are believed to be functionally interchangeable, users should be aware of the existence of differences.

For large cylinders in medical oxygen traffic, the industry has employed non-interchangeable outlet connections within the medical connections system complying with AS 2473, *Valves for compressed gas cylinders (threaded outlet)*. The cost of converting large numbers of these cylinders to pin-indexed outlet connections is prohibitive. As a result, the Committee decided to formalize the use of Type 10 and Type 10.5 for medical oxygen cylinders with a water capacity greater than 5 kg in the following manner:

(a) Type 10 for medical oxygen cylinders up to a pressure of 175 bar.

(b) Type 10.5 for medical oxygen cylinders above 175 bar to 200 bar, inclusive.

All other medical gas cylinders are to have pin-indexed outlet connections. At present, it is specified that cylinders with a water capacity of between 5 kg and 30 kg be filled to 175 bar. However, the Committee intends to review, after five years, specification for valves with cylinders with a water capacity greater than 5 kg but less than 30 kg, with the intent of raising the filling pressure to 200 bar.

It is strongly recommended that users should upgrade their medical pressure regulators to accept a 200 bar inlet and be equipped with Type 10.5 inlet connections.

All sizes of medical breathing air and oxygen/carbon dioxide mixtures (not exceeding 7%) cylinder connections are pin-indexed and although there is general acceptance in the medical industry of a limitation of a maximum pressure of 175 bar, AS 2472—1985 is silent on this issue. The Committee has decided to allow acceptance of this pressure limitation for a period of five years from the publication of this Standard.

After this period of grace has elapsed, a pressure of 200 bar can be introduced for medical breathing air cylinders above 5 kg water capacity. However, the 200 bar pressure may be introduced in specific hospitals or other health care facilities before the expiry of the grace period, if the hospital requests supply of cylinders filled to the higher pressure, and a complete audit and replacement, where necessary, is made of the downstream equipment within the health care facility.

The diversity of demands may exhaust the combinations of single pin indexing; therefore, in this Standard, the Committee adopts the two-pin double-row connections in the current ISO 407:1991 and ANSI/CSA/CGA V-1:1987.

This revision covers the area of concern regarding the dangerous potential of the connection of industrial carbon dioxide to medical nitrous oxide applications. This revision specifies a pin-indexed connection for all nitrous oxide applications to prevent incorrect gas connections.

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Originated as AS CB4 Supplement 1—1955.
Previous edition AS 2472—1985.
Fourth edition 1996.

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Valves for medical gas cylinders (including pin-indexed outlet)

1 SCOPE This Standard specifies inlet threads, outlet non-interchangeability features, materials, testing and marking requirements for medical gas cylinder valves.

NOTE: Although medical gases may also be used for non-medical breathing applications, it is not intended that valves specified in this Standard be mandatory for non-medical applications.

2 REFERENCED DOCUMENTS The following Standards are referred to in this Standard:

AS
2030 The approval, filling, inspection, testing and maintenance of cylinders for the storage and transport of compressed gases (known as the SAA Gas Cylinders Code)
2030.1 Part 1: Cylinders for compressed gases other than acetylene

2473 Valves for compressed gas cylinders (threaded outlet)

3 DEFINITIONS For the purpose of this Standard, the definitions given in AS 2030.1 and the following apply.

Medical gas—gas or gas mixture in a cylinder for use for patient care, including therapeutic, diagnostic and prophylactic application and for powering surgical tools.

4 VALVES STEM THREAD The valve stem (inlet) thread shall comply with AS 2473.

5 OUTLET CONNECTIONS

5.1 Large medical oxygen cylinders For gas cylinders exceeding 30 kg water capacity to contain medical oxygen, the outlet connections shall be Type 10 for pressure up to and including 175 bar and Type 10.5 for pressures above 175 bar to 200 bar inclusive.

NOTES:

1 See AS 2473 for details of both types.

2 See Preface for rationale.

3 The Committee intends to review, after five years, the specification for valves with oxygen cylinder with a water capacity greater than 5 kg but less than 30 kg, with the intent of raising the filling pressure to 200 bar. It is strongly recommended that users should upgrade their medical pressure regulators to accept a 200 bar inlet and be equipped with Type 10.5 inlet connections.

5.2 Medical breathing air cylinders All sizes of medical breathing air and oxygen/carbon dioxide (carbon dioxide not exceeding 7%) mixtures cylinders are to be pin-indexed. These cylinders are to be pressure-limited at 175 bar for a fixed period of time (see Preface). After expiry of this fixed period time, the pressure limit may be raised to 200 bar for medical breathing air cylinders above 5 kg water capacity. However, in some circumstances, the 200 bar pressure may be introduced in specific hospitals or other health care facilities before the period (see Preface).