

AS 3840.1—1998

Reconfirmed 2016

Australian Standard™

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**Pressure regulators for use with  
medical gases**

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

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This Australian Standard was prepared by Committee ME/2, Gas Cylinders. It was approved on behalf of the Council of Standards Australia on 18 September 1998 and published on 5 December 1998.

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The following interests are represented on Committee ME/2:

A.C.T. WorkCover Authority  
Airconditioning and Refrigeration Wholesalers Association  
Association of Certification Bodies  
Australian Chamber of Commerce and Industry  
Australian Institute of Pressure Equipment Engineers  
Australian Liquefied Petroleum Gas Association  
Boiler and Pressure Vessels Manufacturers Association of Australia  
Department of Administrative and Information Services, S.A.  
Department of Defence (Australia)  
Department of Minerals and Energy, Qld  
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*This Standard was issued in draft form for comment as DR 97487.*

STANDARDS AUSTRALIA

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RECONFIRMATION

OF

AS 3840.1—1998

Pressure regulators for use with medical gases

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

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RECONFIRMATION NOTICE

Technical Committee ME-002 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 21 July 2016.

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Australia New Zealand Industrial Gas Association  
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The Australian Gas Association  
Welding Technology Institute of Australia  
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## NOTES

Australian Standard™

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First published as AS 3840.1—1998.

## PREFACE

This Standard was prepared by the Standards Australia/Standards New Zealand Committee ME/2, Gas Cylinders. This is a new Standard to fulfil a need within the medical gas industry for compressed gas regulators and compressed gas regulators with flow-metering devices.

This Standard is the result of a consensus amongst representatives on the Joint Committee to produce it as an Australian Standard.

The range of regulators included in this Standard are as follows:

- (a) Regulators with connections complying with AS 2472, *Valves for medical gas cylinders (including pin-indexed outlet)* and suitable for user connection to high-pressure gas cylinders with a fill pressure up to 200 bar at 15°C (permanent gases), and equivalent filling ratio resulting in no more than 24 000 kPa at 65°C for high-pressure liquefiable gases.
- (b) High-pressure regulators that are an integral part of medical equipment and suitable for connection to high-pressure gas cylinders, subject to the current pressure limitations designated in AS 2472.
- (c) Low-pressure regulators, for use with pressures up to 1400 kPa, for user connection to terminal units of medical gas pipeline systems.

This Standard generally aligns with ISO 10524, *Pressure regulators and pressure regulators with flow-metering devices for medical gas systems* and EN 738-1, *Pressure regulators for use with medical gases—Pressure regulators and pressure regulators with flow-metering devices* with magnification and clarification of the test procedures and test result limitations.

Regulations of Federal and other State Authorities may impinge on the use of this Standard and users should be aware of this possibility.

IT SHOULD BE NOTED THAT COMPLIANCE WITH THIS STANDARD MAY NOT NECESSARILY FULFIL ALL LEGAL OBLIGATIONS.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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## STANDARDS AUSTRALIA

**Australian Standard****Regulators and flow-metering devices for use with medical gas cylinders****1 SCOPE**

**1.1 General** This Standard specifies requirements for pressure regulators, pressure regulators with integral flow-metering devices and flow-metering devices which are intended to be connected to pressure regulators for the administration of medical gases.

**1.2 Medical gases** This Standard covers the following common medical gases:

- (a) Air.
- (b) Carbon dioxide.
- (c) Helium.
- (d) Oxygen.
- (e) Nitrogen.
- (f) Nitrous oxide.
- (g) Xenon.
- (h) Mixtures of oxygen and carbon dioxide.
- (i) Mixtures of oxygen and helium.
- (j) Mixtures of oxygen and nitrogen.
- (k) Mixtures of oxygen and nitrous oxide.
- (l) Other gas mixtures to which pin index configurations have been assigned.

NOTE: The list of medical gases shown is not exhaustive.

**1.3 Regulators** The types of pressure regulators covered by this Standard are as follows:

- (a) Regulators intended to be connected by the user to high-pressure gas cylinders with a fill pressure (permanent gases) of up to 20 000 kPa at 15°C and equivalent filling ratio resulting in no more than 24 000 kPa at 65°C for high-pressure liquefiable gases and with inlet connections complying with AS 2472.
- (b) High-pressure regulators that are an integral part of medical equipment (e.g. anaesthetic machines, lung ventilators, resuscitators) and suitable for connection to high-pressure gas cylinders, see the current pressure limitations referred to in AS 2472.
- (c) Low-pressure regulators (inlet pressure up to 1 400 kPa) intended to be connected by the user to terminal units of medical gas pipeline systems.

NOTE: Although in this Standard the diaphragm type of regulator has been illustrated (see Figure 1), it also applies to regulators of other designs, e.g. piston type.

**1.4 Exceptions** This Standard does not apply to—

- (a) regulators that are an integral part of medical gas pipeline systems, such as medical gas manifolds (these require reference to AS 2896);