Filling of portable gas cylinders

Part 2: Filling of portable cylinders for self-contained underwater breathing apparatus (SCUBA) and non-underwater self-contained breathing apparatus (SCBA)—Safe procedures
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The following interests are represented on Committee ME/2:

- A.C.T. WorkCover Authority
- Airconditioning and Refrigerant 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
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PREFACE

This Standard was prepared by the Standards Australia/New Zealand Committee ME/2, Gas Cylinders, and supersedes AS 2704—1984, Portable cylinders for resuscitators and self-contained breathing apparatus (non-underwater)—Safety guide and AS 2705—1984, Portable cylinders for self-contained underwater breathing apparatus (SCUBA)—Safety guide.

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

The use of privately owned breathing apparatus brings compressed gas cylinders into the hands of people who may not be familiar with the risks involved in their use and the care required to maintain them in a safe condition. Inspecting authorities consider it desirable that recommendations drawing attention to both the dangers associated with compressed gas cylinders and practices that will serve to minimize these dangers, be available for guidance.

Private persons and organizations considering using cylinders as part of underwater breathing apparatus or non-underwater breathing apparatus, may not be familiar with the appropriate Australian Standard. Therefore to ensure the safety of themselves and their members, they should seek guidance in regard to acceptable practice. Furthermore, filling of cylinders with air is sometimes carried out by firms or diving groups other than the normal fillers of gas cylinders. Such firms or diving groups should seek guidance on the necessary precautions to be observed.

While the SAA Gas Cylinders Code (AS 2030.1) covers general requirements for the safe use of all types of gas cylinder, it does not cover some of the particular problems that arise through the handling of cylinders by private persons under the special conditions presented by the use of breathing apparatus. The purpose of this Standard is to provide such guidance for the safe use of breathing apparatus cylinders.

This Standard has expanded and defined clearly the pressure limitations of the types of valves used in conjunction with SCUBA and SCBA cylinders. It also defines the information that shall be marked permanently on the bodies of valves fitted to SCUBA and SCBA cylinders.

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.

Other authorities and regulations may affect 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.
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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies procedures on safe practices for filling gas cylinders for self-contained underwater breathing apparatus (SCUBA) and non-underwater self-contained breathing apparatus (SCBA) where the breathing gas is compressed atmospheric air. Filling methods recommended are compressing of atmospheric air and decant filling of compressed atmospheric air.

There are extremely high risks involved in the compressing or decanting of breathing gases and gas mixtures with more than 22% oxygen and these procedures are outside the scope of this Standard.

WARNING: SEVERE COMPATIBILITY PROBLEMS WILL OCCUR IF OXYGEN-ENRICHED MIXTURES ARE INTRODUCED INTO EQUIPMENT PREVIOUSLY USED FOR BREATHING AIR. THESE MAY RESULT IN THE INSTANTANEOUS RELEASE OF EXTREMELY LARGE AMOUNTS OF ENERGY.

1.2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS
1349 Bourdon tube pressure and vacuum gauges
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
2299 Occupational diving
2337 Gas cylinder test stations
2337.1 Part 1: General requirements, inspections and tests—Gas cylinders
2337.3 Part 3: Inspection and testing of fibre reinforced plastic (FRP) gas cylinders
2473 Valves for compressed gas cylinders (threaded outlet)
4484 Industrial, medical and refrigerant compressed gas cylinder identification

AS/NZS
1715 Selection, use and maintenance of respiratory protective devices
1716 Respiratory protection devices

SAA
MP48 Certificated gas cylinder test stations

BS EN
250 Respiratory equipment—Open-circuit self-contained air diving apparatus—Requirements, testing and marking