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Australian Standard 2488—1981

RESUSCITATORS, RESUSCITATOR CONTAINERS AND RESUSCITATOR KITS

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and department were officially represented on the committee entrusted with the preparation of this standard:

Australian and New Zealand Intensive Care Society

Australian Chamber of Commerce

Australian College of Paediatrics

Australian Resuscitation Council

Australian Society of Anaesthetists

Commonwealth and State Departments of Health

Confederation of Australian Industry

Department of Defence

Department of Mineral Resources and Development

Metal Trades Industry Association of Australia

National Safety Council of Australia

Port of Melbourne Authority

Royal Australasian College of Physicians

Royal Australasian College of Surgeons

Royal Australian College of General Practitioners

Royal Life Saving Society of Australia

Southern Mines Rescue Station Committee

St Johns Ambulance Brigade

Surf Life Saving Association of Australia

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AUSTRALIAN STANDARD

RESUSCITATORS, RESUSCITATOR CONTAINERS AND RESUSCITATOR KITS

AS 2488—1981

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PREFACE

This standard was prepared by the Association's Committee on Resuscitators and Ventilators, under the direction of the Medical Materials and Equipment Standards Committee.

The standard applies to portable devices used in emergency situations to provide lung ventilation for individuals whose breathing is inadequate. It does not apply to automatic lung ventilators that ventilate patients for long periods.

The effective and safe use of a resuscitator is determined not only by the performance of the resuscitator, but also by the skill of the operator. This standard does not describe the content or standard of training programs to develop such skill nor does it state who should or should not use a resuscitator; these will be determined by the organizations involved in teaching resuscitation. Throughout the standard it is assumed that the resuscitator is used as recommended by the manufacturer. Where applicable, the performance required of the resuscitator in test circuits is specified.

In the preparation of this standard, the committee was helped by drafts from ISO/TC 121* on anaesthetic equipment and medical breathing machines.

This standard makes reference to the following standards:

AS 1169 SAA Medical Agents and Gases Safety Code†
AS 1349 Bourdon Tube Pressure and Vacuum Gauges
AS 2030 SAA Gas Cylinders Code
AS 2496 Breathing Attachments for Anaesthetic Purposes for Human Use

*ISO -International Organization for Standardization
†In course of revision.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
RESUSCITATORS, RESUSCITATOR CONTAINERS AND RESUSCITATOR KITS

SECTION 1. SCOPE AND DEFINITIONS

1.1 SCOPE. This standard specifies requirements for the structure, components, performance and safety features of hand-powered and oxygen-powered resuscitators designed for use in the open air or in buildings (see Note). Those aspects of resuscitator containers and kits that affect the operation of the resuscitator or its delivery to the site of use are also specified.

NOTE: In special conditions such as in mine rescue when flammable atmospheres may be present, or in extremes of temperature, specially designed resuscitators may be required. Requirements for these resuscitators are not included.

1.2 APPLICATION. This standard applies only to devices of the type indicated in Clause 1.1.

Resuscitators designed for adults but which may be used for children are subject to this standard if they comply with the following (see Note 1):

(a) Where an unmodified resuscitator is used and appropriate ventilation is judged by the operator.

(b) Where the resuscitator has a control which modifies its performance to meet the needs of ventilation of children.

This standard does not apply to devices that have been designed specifically to deliver air/oxygen mixtures to the spontaneously breathing patient (see Note 2), unless such devices are part of the resuscitator or resuscitator kit and can affect the performance of the resuscitator, nor does it apply to pressure cycled resuscitators (see Note 3), resuscitators powered by gases other than oxygen (see Note 4) and electrically-powered resuscitators.

NOTES:

1. If a resuscitator can deliver a tidal volume suitable for an adult, without a pressure-limiting device, dangerous over-inflation can occur if it is used for small children, especially with an endotracheal tube.

   Larger tidal volumes can compensate for increased dead space when a resuscitator is used to inflate the lungs of children, but a large apparatus dead space can be a hazard for small children breathing spontaneously.

   If the above considerations apply to the use of a particular resuscitator, this standard requires a warning to be given that it is not suitable for small children.

2. When a patient starts to breathe spontaneously the resuscitator's action may compete with the patient's breathing. Requirements for those resuscitators which are automatically triggered and/or cycled are not included, but if suitable devices and techniques are developed in the future, requirements for them may then be incorporated in this standard.

3. Pressure-cycled resuscitators are unlikely to provide effective ventilation for a patient with high airway resistance or stiff lungs and chest. Effective cardiac compression terminates the inflation cycle (American Heart Association and National Academy of Sciences, National Research Council, 1974, *J. Amer. Med. Ass.* **227**, 833, Supplement).

4. If a resuscitator powered by a gas other than oxygen is developed, consideration will be given to the inclusion of appropriate requirements in this standard.

1.3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

1.3.1 Compressible unit—a hollow bag or similar device that can be compressed by hand so that gas is expelled from it.

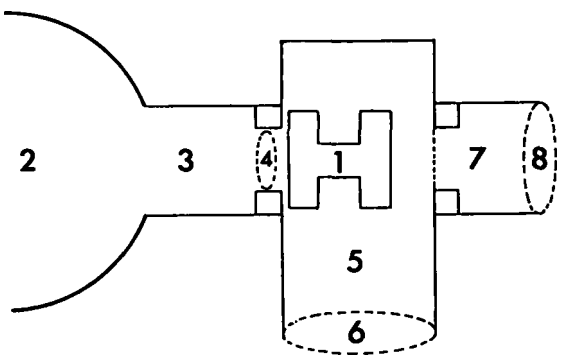
1.3.2 Conduit, expiratory—the connection between the patient valve and the expiratory port which contains exhaled gas (see Fig. 1.1).

1.3.3 Conduit, patient connection—the connection between the patient valve and the inflating or inspiratory port (see Fig. 1.1).

1.3.4 Connector, face mask—the opening in the face mask into which the patient connection port is inserted.

1.3.5 Cycling—the process by which the resuscitator is changed from the inflating or inspiratory mode to the expiratory mode.

1.3.6 Dead space—apparatus—that volume of previously exhaled gas in any part of the resuscitator delivered to the patient in the succeeding inflating or inspiratory phase.



LEGEND:
1. Patient valve
2. Compressible unit or other parts of resuscitator (e.g. compressed oxygen source)
3. Intermediate tubing
4. Inflating or inspiratory port
5. Patient connection conduit
6. Patient connection port
7. Expiratory conduit
8. Expiratory port

NOTES:
1. In oxygen-powered resuscitators, a trigger is attached to the patient valve.
2. In some resuscitators, the expiratory port and patient valve(s) are not in the resuscitator head (e.g. circle absorption systems).

Fig. 1.1. GENERAL SCHEME OF THE PORTS AND CONDUITS IN A RESUSCITATOR HEAD