BS EN ISO 407:2023

BSI Standards Publication

Small medical gas cylinders — Pin-index yoke-type valve connection

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The UK participation in its preparation was entrusted to Technical Committee PVE/3/1, Gas containers - Valve fittings for gas containers.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Small medical gas cylinders - Pin-index yoke-type valve connections (ISO 407:2023)

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Kleine Gasflaschen für die medizinische Anwendung - Ventilseitenstutzen mit Anschlussbügel nach dem PIN-Index-System (ISO 407:2023)

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European foreword

This document (EN ISO 407:2023) has been prepared by Technical Committee ISO/TC 58 "Gas cylinders" in collaboration with Technical Committee CEN/TC 23 “Transportable gas cylinders” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2024, and conflicting national standards shall be withdrawn at the latest by February 2024.

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinders fittings,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 23, *Transportable gas cylinders,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 407:2021) of which it constitutes a minor revision.

The main changes are as follows:

— correction of Figure 1.

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Small medical gas cylinders — Pin-index yoke-type valve connections

1 Scope

This document is applicable to pin-index yoke-type valve connections for medical gas cylinders, with a working pressure up to a maximum of 200 bar or test pressure up to a maximum of 300 bar, or both.

NOTE 1 This type of connection is primarily used for small cylinders (5 l or below).

NOTE 2 In this document the unit bar is used, due to its universal use in the field of technical gases. It should, however, be noted that bar is not an SI unit, and that the corresponding SI unit for pressure is Pa (1 bar = 10^5 Pa = 10^5 N/m^2).

This document specifies:

— basic dimensions;

— requirements for alternative designs of the yoke-type valve connections;

— dimensions and positions for the holes and pins for the outlet connections.

It also specifies the dimensions and positions for the holes and pins for the outlet connections for gases and gas mixtures.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 32, *Gas cylinders for medical use — Marking for identification of content*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Valve

Each small medical gas cylinder can be fitted with a yoke valve (see Clause 6). The yoke valve shall have location holes of the dimensions and in the positions indicated in Clause 8 for the appropriate gas or gas mixture (see Table 1).

The name or chemical symbol of the gas or gas mixture shall be clearly and indelibly stamped on the valve.

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Table 1 — Allocated gases and gas mixtures

Gas or gas mixture	Chemical symbol
oxygen	O_2
oxygen/carbon dioxide (CO_2 ≤ 7 %)	$O_2 + CO_2$
oxygen/helium (He ≤ 80 %)	O_2 + He
ethylene	C_2H_4
nitrous oxide (with or without liquid draw-off)	N_2O
cyclopropane	C_3H_6
helium helium/oxygen (O_2 < 20 %)	He
carbon dioxide (with or without liquid draw-off) carbon dioxide/oxygen CO_2 > 7 %	CO_2
medical air	Air
nominal mixture 50 % oxygen/50 % nitrous oxide (47,5 % < N_2O < 52,5 %)	$O_2 + N_2O$
nitrogen	N_2
mixture of air, helium and carbon monoxide (CO < 1 %)	Air + He + CO

5 Yoke

The connecting yoke shall conform to the requirements and dimensions given in Clauses 6 and 7. The yoke shall be fitted with pins, the dimensions and the positions of which correspond to the holes in the valve as indicated in Clause 8 for the appropriate gas or gas mixture.

The name or chemical symbol of the gas or gas mixture shall be clearly and indelibly stamped on the yoke. If an identification colour is used, it shall be in conformity with ISO 32.

Examples of the alternative designs for the connecting yoke are given in 7.2.

In Figures 3 and 4, the circled numbers and letters are the pin-hole positions.

6 Basic dimensions

6.1 General

The basic dimensions for pin-index yoke-type valve connections are shown in Figures 1 to 4 and are listed in Table 2.

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