

SLOVENSKI STANDARD oSIST prEN ISO 407:2020

01-marec-2020

Male plinske jeklenke za uporabo v medicini - Ventilski priključni nastavki po sistemu pin-index (ISO/DIS 407:2020)

Small medical gas cylinders - Pin-index yoke-type valve connections (ISO/DIS 407:2020)

Kleine Gasflaschen für die medizinische Anwendung - Ventilseitenstutzen mit Anschlussbügel nach dem PIN-Index-System (ISO/DIS 407:2020)

iTeh STANDARD PREVIEW

Petites bouteilles à gaz médicaux , Raccords de robinets du type étrier avec ergots de sécurité (ISO/DIS 407:2020)

oSIST prEN ISO 407:2020

Ta slovenski standard je i stoveten zlog/stanprEN ISO 3407 5f3a-4196-823c-62fd0b9259d6/osist-pren-iso-407-2020

ICS:

11.040.10	Anestezijska, respiratorna in reanimacijska oprema	Anaesthetic, respiratory and reanimation equipment
23.020.35	Plinske jeklenke	Gas cylinders
23.060.40	Tlačni regulatorji	Pressure regulators

oSIST prEN ISO 407:2020

en,fr,de



iTeh STANDARD PREVIEW (standards.iteh.ai)

oSIST prEN ISO 407:2020 https://standards.iteh.ai/catalog/standards/sist/c8dc3209-5f3a-4196-823c-62fd0b9259d6/osist-pren-iso-407-2020

DRAFT INTERNATIONAL STANDARD ISO/DIS 407

ISO/TC 58/SC 2

Voting begins on: **2020-02-06**

Secretariat: AFNOR

Voting terminates on: 2020-04-30

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

Petites bouteilles à gaz médicaux — Raccords de robinets du type à étrier avec ergots de sécurité

ICS: 11.040.10

iTeh STANDARD PREVIEW (standards.iteh.ai)

oSIST prEN ISO 407:2020 https://standards.iteh.ai/catalog/standards/sist/c8dc3209-5f3a-4196-823c-62fd0b9259d6/osist-pren-iso-407-2020

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION. This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING



Reference number ISO/DIS 407:2020(E)

iTeh STANDARD PREVIEW (standards.iteh.ai)

oSIST prEN ISO 407:2020 https://standards.iteh.ai/catalog/standards/sist/c8dc3209-5f3a-4196-823c-62fd0b9259d6/osist-pren-iso-407-2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office CP 401 • Ch. de Blandonnet 8 CH-1214 Vernier, Geneva Phone: +41 22 749 01 11 Fax: +41 22 749 09 47 Email: copyright@iso.org Website: www.iso.org

Published in Switzerland

Contents

Page

Fore	eword		iv
1	Scope		1
2	Norm	ative references	1
3	Term	s and definitions	
4	Valve		
5	Voke		2
6	D I	· ·	
6	Basic	dimensions	2
	6.1	General	2
	6.2	Pin-Index yoke-type valve body	
	0.5	Single-pin yoke-type valve connection system with the pine in a single row	
	0.4 6 5	Two-pin yoke-type valve connection system with the pins in a single row	
	6.6	Basic dimensions	
7	Requi	irements for alternative designs of voke-type valve connections	6
,	7.1	Requirements for the design of the connecting voke	6
	7.2	Examples of alternative construction for the connecting yoke	
8	Dime	nsions and positions of the holes and pins for yoke-type valve connections	9
	8.1	General Contraction of the second sec	9
	8.2	Outlet connection with single-pin system	9
	8.3	Outlet connections with two-pin/single-row system	
		8.3.1 Outlet connection for oxygen	
		8.3.2 Outlet connection for oxygen/carbon dioxide mixture ($CO_2 \le 7\%$)	
		8.3.3 Outlet connection for oxygen/helium mixture (He \leq 80 %)	
		8.3.4 http://utilet.connection.for/ethylene/cod/3209-3134-130-6230-	
		8.3.5 Outlet connection for nitrous oxide	
		8.3.6 Outlet connection for cyclopropane	
		8.3.7 Outlet connection for herium/oxygen mixture ($O_2 < 20\%$)	
		(CO > 7.0%)	17
		$(UU_2 > 1 \ \%)$	1/ 10
		8.3.10 Outlet connection for nitrogen	
	84	Outlet connection with two-nin/double-row system	20
	0.1	outer connection with two pin/double row system.	

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *cylinders fittings*.

https://standards.iteh.ai/catalog/standards/sist/c8dc3209-5f3a-4196-823c-

This fourth edition cancels and replaces the third edition (ISO 407/2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

- addition of a note in <u>Figure 1</u> on the introduction of a radius to avoid stress concentration;
- addition of dimension "m" in Figure 1;
- the basic dimensions for pin index yoke type value connections have been revised (see <u>Table 2</u>);
- addition of a requirement for the design of the connecting yoke.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at <u>www.iso.org/members.html</u>.

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

1 Scope

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

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

It specifies:

2

- 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 the gases and gas mixtures given in <u>Table 1</u>.

iTeh STANDARD PREVIEW

Normative references (standards.iteh.ai)

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 32:1977, Gas cylinders for medical use ^{9d6} 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 http://www.iso.org/obp
- IEC Electropedia: available at <u>http://www.electropedia.org/</u>

4 Valve

Each small medical gas cylinder can be fitted with a yoke valve (see <u>Clause 6</u>). The yoke valve shall have location holes of the dimensions and in the positions indicated in <u>Clause 8</u> 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 valve.

Gas or gas mixture	Chemical symbol
Oxygen	02
Oxygen/carbon dioxide (CO ₂ u 7 %)	0 ₂ + CO ₂ ,
Oxygen/helium (He u 80 %)	0 ₂ + He
Ethylene	C ₂ H ₄
Nitrous oxide (with and without draw-off)	N ₂ 0
Cyclopropane	C ₃ H ₆
Helium and helium/oxygen (O ₂ < 20 %)	Не
Carbon dioxide (with and without draw-off) and carbon dioxide/oxygen $CO_2 > 7 \%$)	C0 ₂
Medical air	Air
Nominal mixture 50 % oxygen/50 % nitrous oxide (47,5 % < N_2 0 < 52,5 %)	$0_2 + N_2 0$
Nitrogen	N ₂
Mixture of air, helium and carbon monoxide (CO < 1 %)	Air + He + CO

Table 1 — Allocated gases and gas mixtures

5 Yoke

The connecting yoke shall conform to the requirements and dimensions given in <u>Clauses 6</u> and <u>7</u>. The yoke shall be fitted with pins, the dimensions and the positions of which correspond to the holes in the valve as indicated in <u>Clause 8</u> 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.

https://standards.iteh.ai/catalog/standards/sist/c8dc3209-5f3a-4196-823c-

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

In <u>Figures 3</u> and <u>4</u>, 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.



6.2 Pin-index yoke-type valve body

Key

- ^a Applicable only to single-key valves.
- ^b Consider introduction of radius of 0,5 mm to avoid stress concentration.

Figure 1 — Pin-index yoke-type valve body



6.3 Single-pin yoke-type valve connection system



6.4 Two-pin yoke-type valve connection system with the pins in a single row



Figure 3 — Two-pin yoke-type valve connection system with the pins in a single row



6.5 Two-pin yoke-type valve connection system with the pins in a double row

Figure 4 — Two-pin yoke-type valve connection system with the pins in a double row

6.6 Basic dimensionseh STANDARD PREVIEW See Table 2. (standards.iteh.ai)

https://standards.iteb.ai/eatalog/standards/sist/e8de3200_5f3a_4196_823a			
Dimension	62fd0b92 39d0 /osist-prei	Dimension	mm
а	25 ^{+0,8}	f	0,8 max
b	21,8 - 22,6	g	1,6 ± 0,4
С	16 min	h ^a	20 ± 0,5
D	7 ^{+0,2} 7 ⁻⁰	k	16,5 min
D ₀	2,4 ± 0,8	l_1	44,5 min
D_1	4,75 ^{+0,1} -0	l_2	22 min
<i>D</i> ₂	5,8 to 5,9	l ₃ b	8 min
D_4	6,3 _{_0,2}	l_4^{b}	9,6 max
D_5	6 ⁰ 0,5	l_5	5,5 ^{+0,5}
D ₆ ^c	7 min	l_6	$5,5_{-0,5}^{0}$
d	6,5 _{_0,2}	l ₇	3 to 3,6
d_1	3,9 to 4,0	l ₈ d	15 min
d_2	5,4 ⁰ _{-0,1}	m	1,6 ± 0,25 ^e
		1	

Fable 2 — Basic dimens	ions for pin4index yoke	-type valve connections
------------------------	-------------------------	-------------------------

^a Dimensions *h* and *q*, q_1 (see <u>Clause 6</u>). As an alternative, these dimensions may be given in order to satisfy the requirements of <u>6.1</u> g).

^b Applicable only if a projecting-type safety plug is used.

^c Dimension D_6 is the dimension at the top of the cone.

^d This dimension is very important.

^e larger chamfer permitted, provided dimension "c" is maintained

Dimension	mm	Dimension	mm
<i>d</i> ₃	16 ± 0,5	r	14,3 nom.
d_4	9 ± 0,2	r ₁	12 nom.
е	0,8 max	r ₂	17,5 nom.
^a Dimensions <i>h</i> and <i>q</i> , q_1 (see <u>Clause 6</u>). As an alternative, these dimensions may be given in order to satisfy the requirements of <u>6.1</u> g).			
^b Applicable only if	Applicable only if a projecting-type safety plug is used.		
^c Dimension <i>D</i> ₆ is th	Dimension D_6 is the dimension at the top of the cone.		
^d This dimension is	This dimension is very important.		
e larger chamfer pe	larger chamfer permitted, provided dimension "c" is maintained		

Table 2 (continued)

Requirements for alternative designs of yoke-type valve connections 7

Requirements for the design of the connecting yoke 7.1

The design of the connecting yoke shall meet the following requirements.

- A gas-tight seal shall only be possible when the pins in the voke correspond to the holes in the valve; a)
- when the pins in the yoke do not correspond to the holes in the valve, a gas-tight seal shall not be b) possible and damage to the voke or the valve shall be prevented UVIL
- pins shall be fixed or assembled in such a manner that they cannot be removed by the user or c) become loose in service:
- the sealing washer shall be a retained fit on the yoke spigot; d)
- the use of more than one sealing washer is not permitted 9-407-2020 e)
- the yoke shall be able to resist, without permanent deformation, the load resulting from a torque of f) 50 N.m applied to the valve clamping screw or locking device;
- the dimensions of the yoke shall limit the movement of the valve in the yoke to a maximum of 6° g) about the long axis prior to pin engagement;
- the dimension of the yoke shall not cause any physical interference with the valve and its operation h) or prevent an effective seat at the outlet connection.

Examples of alternative construction for the connecting yoke 7.2

Three alternative designs of pin-index yoke-type connections are shown in Figures 5 to 7.