



BSI Standards Publication

Gas cylinders – Outlet connections for gas cylinder valves for compressed breathable air (ISO 12209:2013)

National foreword

This British Standard is the UK implementation of EN ISO 12209:2013+A1:2016. It is identical to ISO 12209:2013, incorporating amendment 1:2016. It supersedes BS EN ISO 12209:2013, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to ISO text carry the number of the ISO amendment. For example, text altered by ISO amendment A1 is indicated by A1 A1.

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 secretary.

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Date	Text affected
31 January 2017	Implementation of ISO amendment 1:2016 with CEN endorsement A1:2016
31 May 2018	Implementation of ISO corrected text 01 March 2017: Figures 16, 18, 19 and 20 corrected

English Version

Gas cylinders - Outlet connections for gas cylinder valves for compressed breathable air (ISO 12209:2013)

Bouteilles à gaz - Raccords de sortie
pour robinets de bouteilles à gaz pour air
comprimé respirable (ISO 12209:2013)

Gasflaschen - Ausgangsanschlüsse für
Gasflaschenventile für verdichtete
Atemluft (ISO 12209:2013)

This European Standard was approved by CEN on 17 August 2013.

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European foreword

This document (EN ISO 12209:2013) 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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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Endorsement notice

The text of ISO 12209:2013 has been approved by CEN as EN ISO 12209:2013 without any modification.

European foreword to amendment A1

This document (EN ISO 12209:2013/A1:2016) 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 Amendment to the European Standard EN ISO 12209:2013 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2017, and conflicting national standards shall be withdrawn at the latest by June 2017.

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Endorsement notice

The text of ISO 12209:2016/Amd 1:2016, Corrected version 2017-03 has been approved by CEN as EN ISO 12209:2013/A1:2016 without any modification.

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 12209 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*, in collaboration with Technical Committee CEN/TC 23, *Transportable gas cylinders*.

This first edition of ISO 12209 cancels and replaces the first editions of the ISO 12209 series ([ISO 12209-1:2000](#), [ISO 12209-2:2000](#), [ISO 12209-3:2000](#)), which have been technically revised.

The main changes are:

- combination of former three parts of ISO 12209 into a single ISO 12209;
- modification of valve outlet, adaptor and o-ring dimensions; and
- addition of an outlet connection type test procedure in [Annex A](#).

Gas cylinders – Outlet connections for gas cylinder valves for compressed breathable air

1 Scope

This International Standard specifies the characteristics of outlet connections for gas cylinder valves for compressed breathable air gas cylinders. It states the fundamental requirements for both; the connection and its components and includes basic dimensions. Included in this International Standard are the following connections:

- yoke type outlet connection for SCUBA use up to a maximum cylinder working pressure of 232 bar;
-  threaded type outlet connections up to a maximum cylinder working pressure of 232 bar, 300 bar and 500 bar; 
- threaded type outlet connection for SCUBA use up to a maximum cylinder working pressure of 232 bar including adaptor for users to convert into a yoke type outlet.

[Annex A](#) gives the outlet connection type test procedures.

Requirements for cylinder valves (see [ISO 10297](#)) are not covered by this International Standard.

Requirements for material specifications and gas/material compatibility (see [ISO 11114-1](#) and [ISO 11114-2](#)) are not covered by this International Standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[ISO 2768-1](#), *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

working pressure

settled pressure of a compressed gas at a uniform reference temperature of 15 °C in a full gas cylinder

[SOURCE: ISO 10286:2007, definition A.2.8]

3.2

SCUBA

self-contained underwater breathing apparatus

3.3

compressed breathable air

gas which has the nominal composition of atmospheric air and is subject to purity level controls

4 Yoke type outlet connection for SCUBA use up to a maximum cylinder working pressure of 232 bar

[Figure 1](#) shows an example of the yoke type outlet connection in the assembled state.

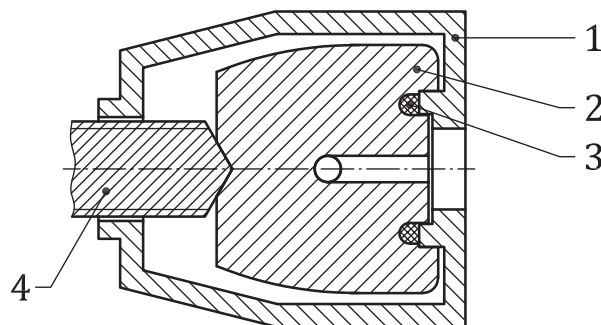
The valve outlet and o-ring dimensions including minimum shore hardness (HS) are shown in [Figure 2](#) and given in [Table 1](#) and [Table 2](#).

The exact form of the o-ring groove is the responsibility of the manufacturer providing the connection passes the outlet connection type test according to [Annex A](#) using an o-ring specified in [Table 2](#).

In order to ensure that the yoke does fit over the valve, minimum dimensions are given for the yoke (see [Figure 3](#) and [Table 3](#)).

No outer dimensions are given for the yoke. However, the dimensions shall be chosen such that the yoke can resist a torque applied via the screw of 20 Nm without visible permanent deformation of the thread and/or the yoke. In addition, the tests described in [Annex A](#) shall be carried out.

Unless otherwise specified, the general tolerances for linear and angular dimensions shall be in accordance with class m of [ISO 2768-1](#).



Key

- 1 yoke
- 2 valve outlet
- 3 o-ring
- 4 screw

Figure 1 — Yoke type connection — Assembly drawing

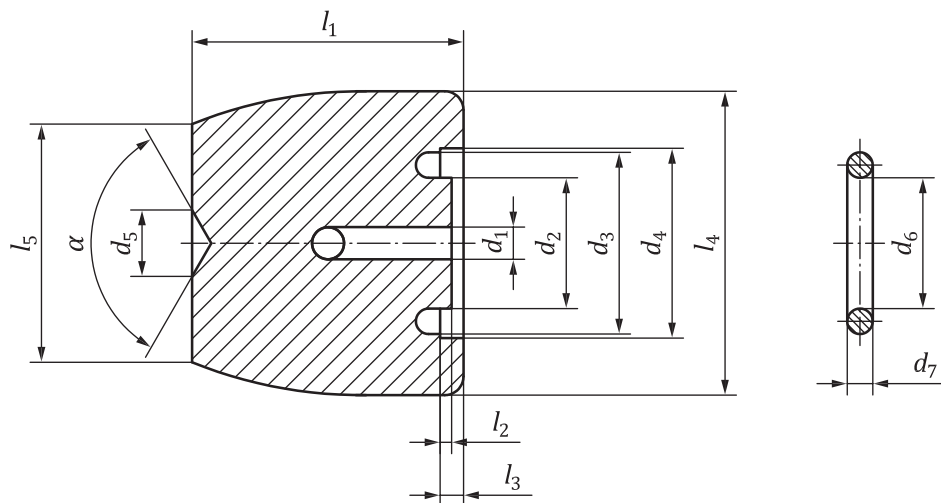


Figure 2 — Valve outlet dimensions

Table 1 — Valve outlet dimensions

Symbol	Dimension mm	Tolerance mm	Concentricity mm
d_1	to be specified by the manufacturer		
d_2	12,67 max.	—	0,1
d_3	17,45 max.	—	0,1
d_4	18,16	$\pm 0,08$	0,1
d_5	6,3	$\pm 0,08$	0,3
l_1	25,5 max.	—	not applicable
l_2	1,0 max.	—	not applicable
l_3	1,98	$\pm 0,35$	not applicable
l_4	28,58 max.	—	not applicable
l_5	22,5 max.	—	not applicable
α	120 °	—	not applicable

Table 2 — O-ring dimensions and properties

Symbol/Property	“Small type”		“Large type”	
	Dimension mm	Tolerance mm	Dimension mm	Tolerance mm
d_6	12,42	± 0,13	12,37	± 0,13
d_7	1,78	± 0,08	2,62	± 0,08
HS	(90 ± 5) Shore A			
NOTE 1 The o-ring dimensions are taken from ISO 3601-1 (same as ASTM D2240) and the hardness is defined in ASTM D2240.				
NOTE 2 The “small type” o-ring is commonly referred to as “-014” by most o-ring manufacturers. The “large type” o-ring is commonly referred to as “-112” by most o-ring manufacturers.				

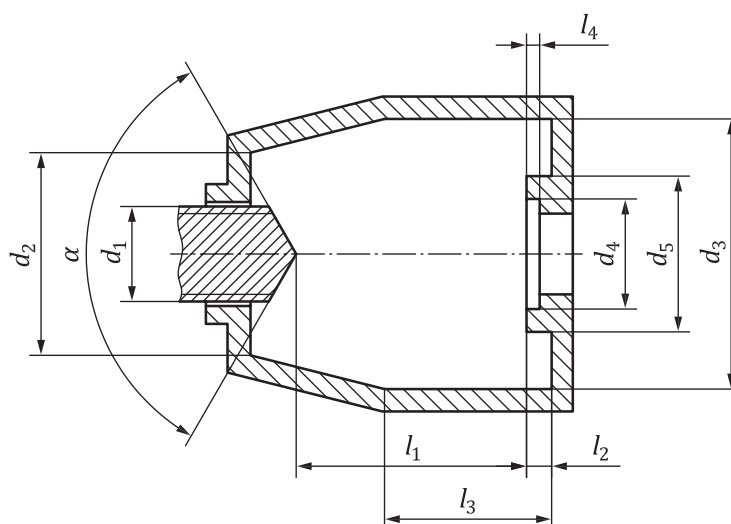


Figure 3 — Yoke dimensions

Table 3 — Yoke dimensions

Symbol	Dimension mm	Tolerance mm	Symbol	Dimension mm	Tolerance mm
l_1	26 min.	—	d_1	10 min	—