



BSI Standards Publication

Respiratory protective devices - Gas cylinder valves

Part 1: Inlet connections

National foreword

This British Standard is the UK implementation of EN 144-1:2018. It supersedes BS EN 144-1:2000, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PH/4, Respiratory protection.

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

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April 2018

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English Version

Respiratory protective devices - Gas cylinder valves - Part 1: Inlet connections

Appareils de protection respiratoire - Robinets de
bouteille à gaz - Partie 1: Raccordements d'entrée

Atemschutzgeräte - Gasflaschenventile
- Teil 1: Eingangsanschlüsse

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European foreword

This document (EN 144-1:2018) has been prepared by Technical Committee CEN/TC 79 “Respiratory protective devices”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by October 2018, and conflicting national standards shall be withdrawn at the latest by October 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN not be held responsible for identifying any or all such patent rights.

This document supersedes [EN 144-1:2000](#).

The following main technical changes have been made compared to [EN 144-1:2000](#):

- a) Title changes to read “Respiratory protective devices — Gas cylinder valves — Part 1: Inlet connections” to be in line with Part 2 and Part 3;
- b) Terms and definition added;
- c) Normative references EN ISO 11363-1 and EN ISO 15245-1 added to replace [Clause 2](#) “Connection on insert connector”;
- d) [Clause 3](#) “Impact resistance” adapted to the test specified in EN ISO 10297:2014, Annex A.

This document is one part of a three-part standard concerning connections for gas cylinder valves for respiratory protective devices:

- Part 1: Inlet connections
- Part 2: Outlet connections
- Part 3: Outlet connections for diving gases Nitrox and oxygen

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies the dimensions and tolerances as well as the impact resistance and marking requirements of inlet connections for connecting cylinder valves to gas cylinders for respiratory protective devices (RPD).

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.

EN ISO 11363-1, *Gas cylinders — 17E and 25E taper threads for connection of valves to gas cylinders — Part 1: Specifications (ISO 11363-1)*

EN ISO 13341, *Gas cylinders — Fitting of valves to gas cylinders (ISO 13341)*

EN ISO 15245-1, *Gas cylinders — Parallel threads for connection of valves to gas cylinders — Part 1: Specification (ISO 15245-1)*

3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 working pressure

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

NOTE Common working pressures are 200 bar, 232 bar and 300 bar.

[SOURCE: EN ISO 10286:2015, 736, modified, Note 1 to entry to Note 3 to entry deleted, New Note 1 to entry included]

4 Dimensional and tolerance requirements

4.1 General

For respiratory protective devices only the thread connections M18x1,5 or M25x2 or 17E shall be used.

NOTE M18x1,5 or M25x2 are the preferred thread connections.

Cylinder valves with a thread connection according to this European Standard shall not be used with an adaptor between the cylinder valve and the gas cylinder.

4.2 Parallel threads M18x1,5 and M25x2

The parallel threads M18x1,5 and M25x2 shall meet EN ISO 15245-1.

NOTE As there are other standards which define the above threads, ISO/TR 11364 gives guidance concerning which threads are dimensionally identical and which are interchangeable.

4.3 Taper thread 17E

The taper thread 17E shall meet EN ISO 11363-1.

NOTE As there are other standards which define the above thread, ISO/TR 11364 gives guidance concerning which threads are dimensionally identical and which are interchangeable.

5 Impact resistance

5.1 General

The strength of the material of the connection between the gas cylinder and the cylinder valve shall withstand impact energy of (120 ± 3) J.

Two assembled cylinder valves excluding the activating means (e.g. hand wheels) shall be tested.

Distortion due to impact and visual displacement of the sealing means of the valve inlet connection is permissible. After impact, the cylinder valve shall withstand a hydraulic pressure test and an internal tightness test. The total leakage (comprising that from the valve internal sealing system plus that from the threaded joint between the cylinder valve and the cylinder/test fixture) shall not exceed $180 \text{ cm}^3/\text{h}$.

Any leakage shall not result from cracking of the valve body. In addition the test sample shall remain capable of being opened for emergency venting purposes by hand or by using a simple tool or actuating connector (e.g. a valve key).

5.2 Testing

The test sample shall be tested in the closed condition as specified by the manufacturer. The test sample shall be fitted into a steel gas cylinder neck, or a similar test fixture made of steel equipped with the corresponding screw thread (see [Figure 1](#)). The procedure to fit the test sample into the cylinder or test fixture shall meet EN ISO 13341 or shall follow the information supplied by the manufacturer.

For the relevant thread and torque ranges, the minimum and maximum torque values, independent of the cylinder material used, shall be applied. One test sample shall be fitted using the minimum value and the second test sample using the maximum value according to EN ISO 13341 or as specified by the information supplied by the manufacturer.

It has to be verified that the threaded joint between the test sample and the cylinder/test fixture does not leak before impact testing by using leak detection spray or other appropriate means.

The test sample shall be vertically struck by an impact weight, tipped with a 13 mm diameter hardened steel ball. The impact weight shall have a minimum mass of 10 kg. The test sample shall be struck once.

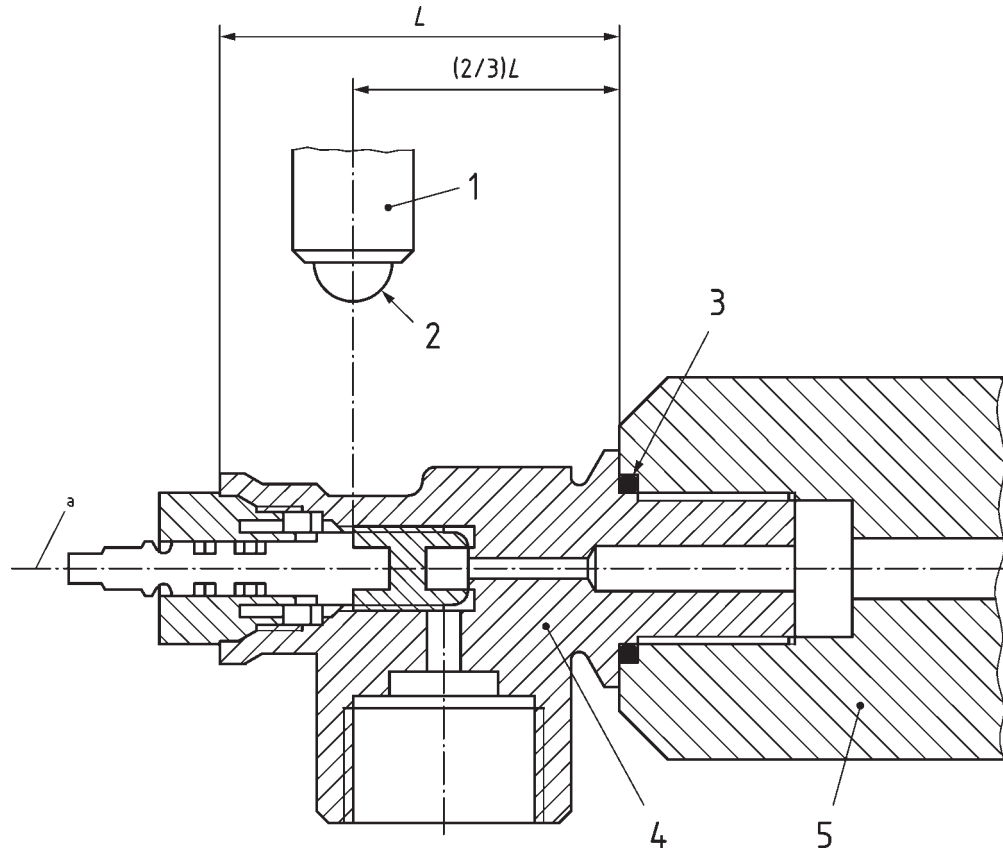
The impact shall occur at 90° to the longitudinal axis of the test sample and co-incident with a plane passing through the same axis. The point of impact shall be at two-thirds of the distance, L , from the plane where the valve inlet connection thread meets the cylinder (cylinder top) to the furthest point of the cylinder valve body excluding the valve spindle, measured along the longitudinal (valve inlet connection) axis of the cylinder valve (see [Figure 1](#)).

Based on the cylinder valve design, the point of impact shall be unobstructed. Examples of obstructions include gauges, outlet connecting threads and pressure-relief devices. If the point of impact cannot be used (e.g. due to installed features), a different point of impact shall be chosen by rotation. If the point chosen by rotation is still obstructed, an alternate point of impact shall be chosen and the equivalent energy value and tolerance shall be calculated and applied.

For safety reasons, the test sample remaining in the closed position shall be hydraulically pressure tested with a test pressure of 1,2 times working pressure. Water or another suitable liquid shall be used as test medium. The hydraulic pressure shall be applied via the valve inlet connection and gradually increased until the test pressure is reached. The pressure shall be maintained for at least 2 min.

Following the hydraulic pressure test, the same test sample, remaining in the closed position, shall undergo an internal leak tightness test at the same test pressure as for the hydraulic pressure test, using compressed air. The pressure shall be applied via the valve inlet connection and be increased until the test pressure is reached.

After a minimum of 1 min the leakage rate shall be measured.



Key

- 1 striker
- 2 hardened steel ball, diameter 13 mm
- 3 O-ring joint
- 4 valve body
- 5 test fixture or gas cylinder
- a longitudinal axis

Figure 1 — Impact test

6 Marking

Cylinder valves meeting the requirements of this European Standard shall be marked with:

- a) the number of this document, i.e. EN 144-1;

NOTE Where the cylinder valve also meets the requirements of [EN 144-2](#) a combined marking, i.e. EN 144-1/-2 can be used.

- b) means of identification of the manufacturer;
- c) the date of manufacture (at least the year);

- d) the thread type identification 18P for M18x1,5 or 25P for M25x2 according to EN ISO 15245-1 or 17E according to EN ISO 11363-1.

NOTE With regard to d), it is possible to differentiate between the marking in [EN 144-1:2000](#) and the marking in this document.

7 Information supplied by the manufacturer

On delivery, information shall make reference to the information supplied by the manufacturer for that device, where a cylinder valve is used.

Bibliography

- [1] ISO/TR 11364, *Gas cylinders — Compilation of national and international valve stem/gas cylinder neck threads and their identification and marking system*
- [2] EN ISO 10286:2015, *Gas cylinders — Terminology (ISO 10286:2015)*

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