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**Gas cylinders — Valve protection caps  
and valve guards — Design, construction  
and tests**

*Bouteilles à gaz — Chapeaux fermés et chapeaux ouverts de protection  
des robinets — Conception, construction et essais*

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# Contents

Page

Foreword.....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions.....	1
4 General requirements.....	2
4.1 Cap .....	2
4.2 Guard.....	2
4.3 Testing .....	2
5 Materials .....	7
6 Type testing.....	7
6.1 General.....	7
6.2 Documentation.....	7
6.3 Number of test samples .....	7
6.4 Preliminary check .....	7
6.5 Torque test (one test).....	7
6.6 Axial test (one test).....	8
6.7 Drop test .....	8
7 Marking .....	9
8 Test report .....	9
Annex A (normative) Marking of caps.....	10

## 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.

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.

ISO 11117 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*.

This second edition cancels and replaces the first edition (ISO 11117:1998) which has been technically revised.

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## Introduction

This International Standard covers devices intended for the protection of gas cylinder valves, where such protection is required, for example, where the valve is unable to meet the impact test requirements of the relevant valve standard to allow safe transport, handling and storage without such protection.

This International Standard specifies the principal dimensions, requirements for fitment and drop test procedure, to confirm the provision of adequate valve protection, in the event of the occurrence of a cylinder toppling from its base.

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# Gas cylinders — Valve protection caps and valve guards — Design, construction and tests

## 1 Scope

This International Standard specifies the requirements for valve protection caps and guards for gas cylinders.

This International Standard defines tests for checking the mechanical strength and physical properties of the valve protection cap or valve guard.

This International Standard applies to protection devices for valves used on cylinders for liquefied, dissolved or compressed gases. This International Standard excludes protection devices for cylinders with a water capacity of 5 l or less and cylinders whereby the protection device is fixed by means of lugs welded or brazed to the cylinder, or is welded or brazed directly to the cylinder. This International Standard does not cover valve protection for breathing apparatus cylinders.

This International Standard does not specify all the requirements that may be necessary to enable the valve protection device to be used for lifting the cylinder.

## 2 Normative references

ISO 11117:2008

The following referenced documents are indispensable for the application 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 10297, *Transportable gas cylinders — Cylinder valves — Specification and type testing*

ISO 14245, *Gas cylinders — Specifications and testing of LPG cylinder valves — Self-closing*

ISO 15995, *Gas cylinders — Specifications and testing of LPG cylinder valves — Manually operated*

## 3 Terms and definitions

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

### 3.1

#### **valve protection cap cap**

device securely fixed over the valve during handling, transportation and storage and which is removed for access to the valve

### 3.2

#### **valve guard guard**

device protecting the valve during handling, transportation, storage

NOTE The guard need not be removed to provide access to the valve.

**3.3 permitted mass**

mass of the cylinder, together with its permanent attachments and test substance contents, as used during the drop test

See 6.7.

**3.4 test valve**

gas filling and/or dispensing device used to verify the guard or protection cap approval in accordance with this International Standard and which represents the valve of equal or lesser dimensions for which approved guards or protection caps provide suitable protection

**4 General requirements**

**4.1 Cap**

The cap shall be of adequate strength to protect the valve during handling and transportation.

It shall be capable of being securely fixed to the cylinder, either by screwed thread or other suitable means.

Provision should be made for assisted fitting or removal of the cap, for example, a hexagonal section.

Unless otherwise specified, the cap shall be provided with vent hole(s), e.g. by diametrically opposed vent holes of 10 mm diameter. Two diametrically opposite vent holes shall be provided, each of them having a minimum diameter of 10 mm. (When the cap has no vent hole, the valve outlet passage of the cylinder shall be plugged to prevent leakage and subsequent pressure build up in the cap.)

Caps designed for use with valve dimensions in accordance with ISO 10297, as applicable, shall conform to dimensions given in Figure 1 and preferably Figure 4 where a threaded fixing connection is used. Caps designed for use with valves with dimensions other than those given in ISO 10297 shall be tested with the intended largest valve. The cap shall be of such dimensions as not to contact any part of the valve.

See Tables 1 and 2.

**4.2 Guard**

The guard shall be of adequate strength to protect the valve during handling and transportation.

It shall be fixed so as to prevent easy removal by the end user or dismantling under normal service conditions.

The design shall permit ready access for valve operation and assembly of operational equipment. When the guard is of a rotating type, it shall be capable of manual orientation.

The clearance dimensions of the guard given in Figure 2 are typical for valves designed in accordance with ISO 10297. The centre of the opening in the guard shall be within  $\pm 10$  mm of the valve outlet axis. The opening shall not extend below the reference plane.

Where a threaded fixing connection is used, the preferred thread dimensions are given in Figure 4.

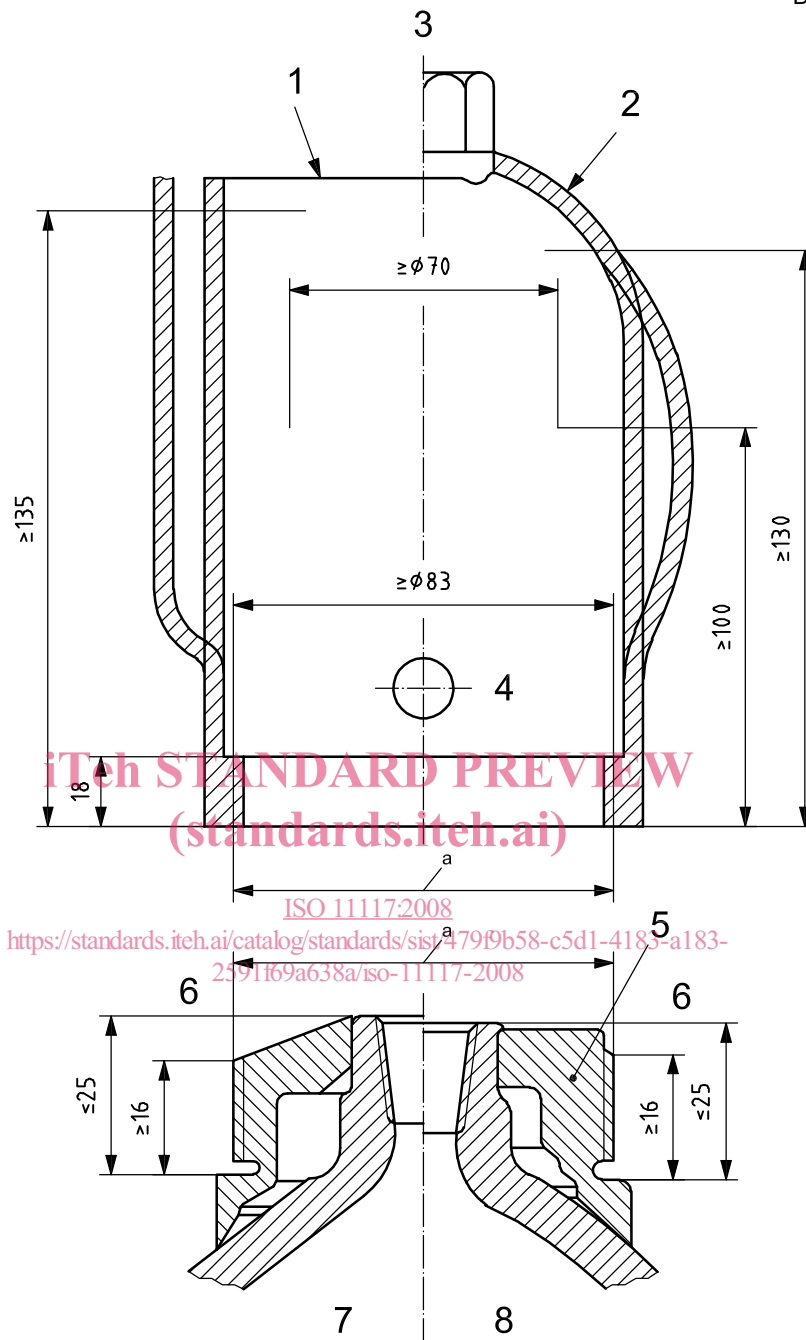
Figure 3 gives examples of guards.

**4.3 Testing**

Type testing of the protection devices shall be performed in accordance with the procedure described in Clause 6.



Dimensions in millimetres



**Key**

- |                                 |                      |
|---------------------------------|----------------------|
| 1 cap with open top             | 5 cylinder neck ring |
| 2 closed cap                    | 6 reference plane    |
| 3 cylinder axis                 | 7 example A          |
| 4 vent $\varnothing \geq 10$ mm | 8 example B          |

<sup>a</sup>  $\varnothing 80 \times 2,309$  Whitworth.

NOTE 1 The outlines and dimensions given are typical for caps in common use. Any other shape or dimension can be used, provided they give appropriate clearance around the valve.

NOTE 2 The preferred 80 mm fixing connection is shown. Alternative sizes, e.g. 78 mm, can be used. Caps for such cylinders should have the appropriate dimensions.

NOTE 3 For open tops, water drainage should be considered.

**Figure 1 — Basic dimensions of valve protection caps and neck rings**