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**Gas cylinders — 17E and 25E taper  
threads for connection of valves to gas  
cylinders —**

**Part 1:  
Specifications**

*Bouteilles à gaz — Filetages coniques 17E et 25E pour le  
raccordement des robinets sur les bouteilles à gaz —*

*Partie 1: Spécifications*





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Published in Switzerland

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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.

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](http://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](http://www.iso.org/patents)).

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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](http://www.iso.org/iso/foreword.html).

This document 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 11363-1:2010), which has been technically revised to allow option C by modifying [Figure 2](#). It also incorporates the Technical Corrigenda ISO 11363-1:2010/Cor 1:2011 and ISO 11363-1:2010/Cor 2:2012.

A list of all parts in the ISO 11363 series can be found on the ISO website.

## Introduction

Gas cylinders intended to contain compressed, liquefied or dissolved gas under pressure are fitted with accessories to allow release and refilling of gas. Hereinafter, the term “valve” will apply to such accessories.

Where the connection between cylinder and valve is obtained by assembly of two taper threads (and external one on the valve stem and an internal one in the cylinder neck), both will have the same nominal taper, thread pitch and thread profile.

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WG on Gas Cylinders

# Gas cylinders — 17E and 25E taper threads for connection of valves to gas cylinders —

## Part 1: Specifications

### 1 Scope

This document specifies dimensions and tolerances for taper screw threads of nominal diameter 17,4 mm (designated as 17E) and 25,8 mm (designated as 25E) used for the connection of valves to gas cylinders.

It does not cover the connection requirements for

- mechanical strength,
- gas tightness, and
- capability of repeated assembly and dismounting operations.

Gauge inspection is covered by ISO 11363-2.

### 2 Normative references

There are no normative references in this document.

### 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 General

##### 3.1.1

##### **basic profile**

theoretical profile, when the profile of the external thread coincides with the profile of the internal thread

##### 3.1.2

##### **design profile**

profile which differs from the basic profile due to the radius of the root, necessary for manufacturing and strength requirements

Note 1 to entry: For such a profile, manufacturing tolerances are taken into account.

**3.1.3**  
**length of external thread**

$l_2$   
length of full form thread on the *valve stem* (3.1.8), measured along the cone axis from the *reference plane A* (3.4.3)

Note 1 to entry: See [Figure 1](#), [Table 1](#) and [Table 3](#).

**3.1.4**  
**length of internal thread**

$L_2$   
length of full form thread in the cylinder neck, measured along the cone axis from the *reference plane F* (3.4.5)

Note 1 to entry: See [Figure 1](#), [Table 2](#) and [Table 4](#).

**3.1.5**  
**pitch**

$P$   
distance, measured parallel to the cone surface, between two homologous points of two parallel consecutive flanks of the same thread

Note 1 to entry: See [Figures 2](#) and [3](#).

**3.1.6**  
**taper**

ratio of the difference of two diameters corresponding to planes normal to the axis of the reference cone, and the axial distance between the same planes

Note 1 to entry: Taper can be expressed as a ratio, as an angle or as a percentage.

**3.1.7**  
**thread profile**

thread shape obtained by the intersection of a plane through the thread axis and the threaded surface

**3.1.8**  
**valve stem**

tapered end of the valve body (inlet connection), with a thread formed on the external surface of the truncated cone

Note 1 to entry: See [Figure 1](#).

**3.1.9**  
**cylinder neck thread**

tapered axial hole in the cylinder neck, with a thread formed on the internal surface of the truncated cone

Note 1 to entry: See [Figure 1](#).

**3.2 Terms relating to cones**

**3.2.1**  
**major cone**

cone bounding the crests of the thread of the *valve stem* (3.1.8), or the roots of the *cylinder neck thread* (3.1.9)

**3.2.2**  
**minor cone**

cone bounding the roots of the thread, of the *valve stem* (3.1.8), or the crests of the *cylinder neck thread* (3.1.9)

**3.2.3****pitch cone**

cone passing coaxially and midway between the *major* (3.2.1) and *minor cones* (3.2.2)

**3.3 Terms relating to diameter (see Figure 1)****3.3.1****major diameter** $d_{1e}$ 

diameter of the *major cone* (3.2.1) at the *valve stem* (3.1.8) thread *reference plane A* (3.4.3) (before any chamfer is cut)

**3.3.2****major diameter** $D_{1e}$ 

diameter of the *major cone* (3.2.1) at *reference plane G* (3.4.6)

**3.3.3****minor diameter** $d_{1i}$ 

diameter of the *minor cone* (3.2.2) at the *valve stem* (3.1.8) thread *reference plane A* (3.4.3) (before any chamfer is cut)

**3.3.4****minor diameter** $D_{1i}$ 

diameter of the *minor cone* (3.2.2) at *reference plane G* (3.4.6)

**3.3.5****pitch diameter** $d_{1p}$ 

diameter of the *pitch cone* (3.2.3) at the *valve stem* (3.1.8) thread *reference plane A* (3.4.3) (before any chamfer is cut)

**3.3.6****pitch diameter** $d_{2p}$ 

diameter of the *pitch cone* (3.2.3) at *reference plane B* (3.4.4)

**3.3.7****pitch diameter** $D_{1p}$ 

diameter of the *pitch cone* (3.2.3) at *reference plane G* (3.4.6)

**3.3.8****pitch diameter** $D_{2p}$ 

diameter of the *pitch cone* (3.2.3) at *reference plane F* (3.4.5) (before any chamfer is cut)

**3.4 Terms relating to reference (see Figure 1)****3.4.1****reference length** $l_1$ 

reference dimension being the distance between the parallel *reference planes A* (3.4.3) and *B* (3.4.4)

**3.4.2****reference length** $L_1$ 

reference dimension being the distance between the parallel *reference planes F* (3.4.5) and *G* (3.4.6)

### 3.4.3

#### reference plane A

reference plane coincident with the small end face of the threaded *valve stem* (3.1.8) and corresponding to diameters  $d_{1i}$  (3.3.3),  $d_{1p}$  (3.3.5) and  $d_{1e}$  (3.3.1)

### 3.4.4

#### reference plane B

reference plane at a distance  $l_1$  (3.4.1) from *reference plane A* (3.4.3) and corresponding to diameter  $d_{2p}$  (3.3.6)

### 3.4.5

#### reference plane F

reference plane coincident with the entry section face of the *cylinder neck thread* (3.1.9) and corresponding to *pitch diameter*  $D_{2p}$  (3.3.8)

### 3.4.6

#### reference plane G

reference plane at a distance  $L_1$  (3.4.2) from *reference plane F* (3.4.5) and corresponding to diameter  $D_{1e}$  (3.3.2),  $D_{1p}$  (3.3.7) and  $D_{1i}$  (3.3.4)

## 4 Requirements

### 4.1 Thread rotation

The thread shall be a right-hand thread, such that it moves away from an observer when rotated clockwise.

### 4.2 Taper

The nominal values for the taper are the following:

- taper ratio: 3/25;
- taper angle: 6° 52';
- taper slope: 12 %.

### 4.3 Thread profile

The thread profile is a British Standard Whitworth (BSW) form with a 55° angle. The form and thread height measurements are perpendicular to the cone surface (see [Figure 3](#)).

NOTE BSW is a coarse thread devised and standardized in 1841 by British engineer Sir Joseph Whitworth (1803-87). It has an angle of thread of 55° and ranges in size from 1/16 in to 2 1/2 in. It is used in many types of engineering throughout the world, although in the UK, its use is now being superseded by the ISO metric system (see ISO 68-1).

It is crucial that the thread profile is cut in this way and not perpendicular to the axis of the cone.

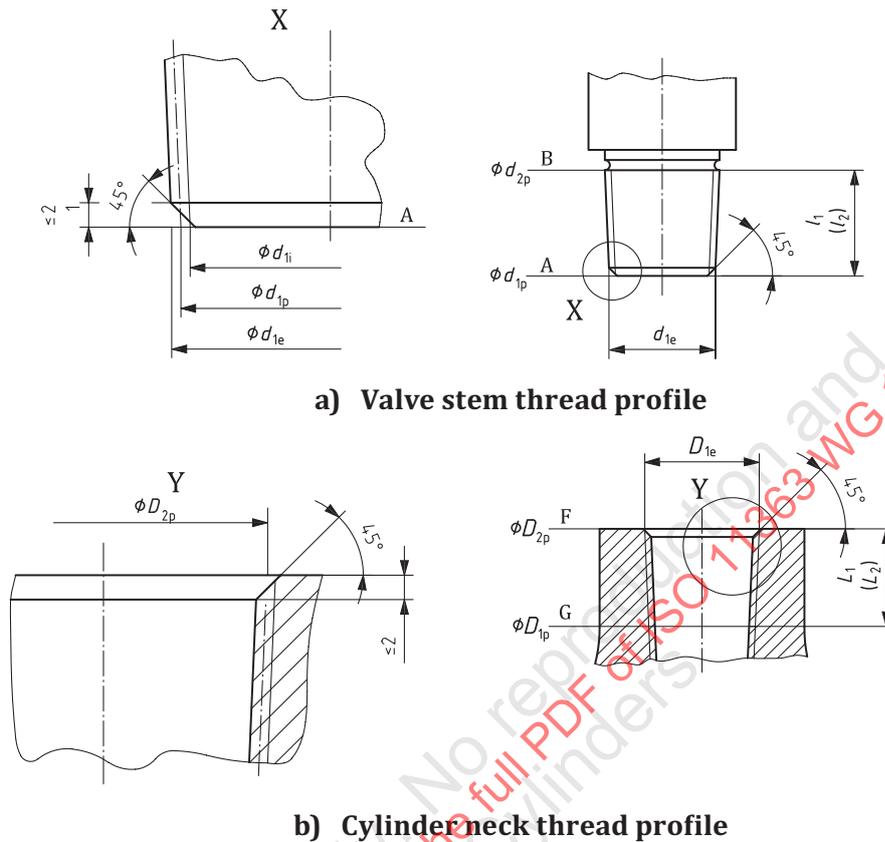
### 4.4 Pitch, $P$

The nominal pitch is 1,814 mm (derived from  $\frac{25,4}{14}$  mm) (see [Figure 3](#)).

### 4.5 Dimensions

Dimensions are given in [Figure 1](#) and the values are given in [Table 4](#).

Dimensions in millimetres



a) Valve stem thread profile

b) Cylinder neck thread profile

**Key**

- $D_{1p}, D_{2p}$  pitch diameter
- $L_1, l_1, l_2$  reference length
- $L_2$  length of internal thread
- $d_{1e}$  major diameter
- $d_{1i}$  minor diameter
- $d_{1p}$  pitch diameter
- $d_{2p}$  pitch diameter
- A reference plane, A
- B reference plane, B
- F reference plane, F
- G reference plane, G

Figure 1 — Thread reference planes and diameters

Table 1 — Valve stem thread dimensions for 17E

Dimensions in millimetres

Valve stem	Major diameter	Pitch diameter	Minor diameter	Pitch diameter	Reference length	Minimum length of full form thread
	$d_{1e}$	$d_{1p}$	$d_{1i}$	$d_{2p}$	$l_1$	$l_2$
Dimension	17,28	16,118	14,956	18,638	21	$\geq 21$
Tolerance	+0,12 0	+0,12 0	+0,12 0	+0,12 0	—	—

**Table 2 — Cylinder neck thread dimensions for 17E**

Dimensions in millimetres

Cylinder neck thread	Major diameter $D_{1e}$	Pitch diameter $D_{1p}$	Minor diameter $D_{1i}$	Pitch diameter $D_{2p}$	Reference length $L_1$	Minimum length of full form thread $L_2$
Dimension	17,16	15,998	14,834	18,038	17	$\geq 17$
Tolerance	0 -0,12	0 -0,12	0 -0,12	0 -0,12	—	—

**Table 3 — Valve stem thread dimensions for 25E**

Dimensions in millimetres

Valve stem	Major diameter $d_{1e}$	Pitch diameter $d_{1p}$	Minor diameter $d_{1i}$	Pitch diameter $d_{2p}$	Reference length $l_1$	Minimum length of full form thread $l_2$
Dimension	25,68	24,518	23,356	27,638	26	$\geq 26$
Tolerance	+0,12 0	+0,12 0	+0,12 0	+0,12 0	—	—

**Table 4 — Cylinder neck thread dimensions for 25E**

Dimensions in millimetres

Cylinder neck thread	Major diameter $D_{1e}$	Pitch diameter $D_{1p}$	Minor diameter $D_{1i}$	Pitch diameter $D_{2p}$	Reference length $L_1$	Minimum length of full form thread $L_2$
Dimension	25,16	23,998	22,836	26,638	22	$\geq 24$
Tolerance	0 -0,12	0 -0,12	0 -0,12	0 -0,12	—	—

## 5 Thread end finish

The thread of the valve stem shall have a 45° chamfer positioned 1 mm to 2 mm (maximum) from reference plane A at the bottom part and a groove at the top (see [Figure 1](#)). The first thread (small end) shall be fully formed and shall exhibit maximum clearance ( $d_{1i}$  shall be minimum).

The thread of the cylinder neck shall have a 45° chamfered opening between 1 mm and 2 mm maximum from plane F (see [Figure 1](#)). The execution of the neck thread shall be as shown in [Figure 2](#).