INTERNATIONAL STANDARD

ISO 11363-1

First edition
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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

Reference number
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Foreword

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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 11363-1 was prepared by Technical Committee ISO/TC 58, *Gas cylinders*, Subcommittee SC 2, *Cylinder fittings*.

This first edition of ISO 11363-1 cancels and replaces ISO 10920:1997 and ISO 11116-1:1999.

ISO 11363 consists of the following parts, under the general title *Gas cylinders — 17E and 25E taper threads for connection of valves to gas cylinders*:

— *Part 1: Specifications*

— *Part 2: Inspection gauges*

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.

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

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

Part 1: Specifications

1 Scope

This part of ISO 11363 specifies dimensions and tolerances for taper screw threads of nominal diameter 17,4 mm (designated 17E) and 25,8 mm (designated 25E) used for the connection of valves to gas cylinders.

It does not cover the connection requirements for:

— mechanical strength;

— gas tightness;

— capability of repeated assembly and dismounting operations.

Gauge inspection is covered by ISO 11363-2.

2 Terms and definitions

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

2.1 General

2.1.1
basic profile
theoretical profile, when the profile of the external thread coincides with the profile of the internal thread

2.1.2
design profile
design profile differs from the basic profile due to the radius of the root, necessary for manufacturing and strength requirements

NOTE For such a profile, manufacturing tolerances are taken into account.

2.1.3
length of external thread, l_2
length of full form thread on the valve stem, measured along the cone axis from the reference plane A

NOTE See Figure 1, Table 1 and Table 3.

2.1.4
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

NOTE See Figure 1, Table 2 and Table 4.

2.1.5
pitch
P
distance, measured parallel to the cone surface, between two homologous points of two parallel consecutive flanks of the same thread

NOTE See Figures 2 and 3.

2.1.6
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 Taper can be expressed as a ratio, as an angle or as a percentage.

2.1.7
thread profile
thread shape obtained by the intersection of a plane through the thread axis and the threaded surface

2.1.8
valve stem
tapered end of the valve body (inlet connection), with a thread formed on the external surface of the truncated cone

NOTE See Figure 1.

2.1.9
cylinder neck thread
tapered axial hole in the cylinder neck, with a thread formed on the internal surface of the truncated cone

NOTE See Figure 1.

2.2 Terms relating to cones

2.2.1
major cone
cone bounding the crests of the thread of the valve stem, or the roots of the cylinder neck thread

2.2.2
minor cone
cone bounding the roots of the thread, of the valve stem, or the crests of the cylinder neck thread

2.2.3
pitch cone
cone passing, coaxially and midway, between the major and minor cones

2.3 Terms relating to diameter

NOTE See Figure 1.

2.3.1
major diameter, d_{1e}
diameter of the major cone at the valve stem thread reference plane A (before any chamfer is cut)

2.3.2
major diameter, D_{1e}
diameter of the major cone at reference plane G

2.3.3
minor diameter, d_{1i}
diameter of the minor cone at the valve stem thread reference plane A (before any chamfer is cut)

2.3.4
minor diameter, D_{1i}
diameter of the minor cone at reference plane G

2.3.5
pitch diameter, d_{1p}
diameter of the pitch cone at the valve stem thread reference plane A (before any chamfer is cut)

2.3.6
pitch diameter, d_{2p}
diameter of the pitch cone at reference plane B

2.3.7
pitch diameter, D_{1p}
diameter of the pitch cone at reference plane G

2.3.8
pitch diameter, D_{2p}
diameter of the pitch cone at reference plane F (before any chamfer is cut)

2.4 Terms relating to reference

NOTE See Figure 1.

2.4.1
reference length, l_1
reference dimension being the distance between the parallel reference planes A and B

2.4.2
reference length, L_1
reference dimension being the distance between the parallel reference planes F and G

2.4.3
reference plane A
reference plane coincident with the small end face of the threaded valve stem and corresponding to diameters d_{1i}, d_{1p} and d_{1e}

2.4.4
reference plane B
reference plane at a distance l_1 from reference plane A and corresponding to diameter d_{2p}

2.4.5
reference plane F
reference plane coincident with the entry section face of the cylinder neck thread and corresponding to pitch diameter D_{2p}

2.4.6
reference plane G
reference plane at a distance L_1 from reference plane F and corresponding to diameter D_{1e}, D_{1p} and D_{1i}

3 Requirements

3.1 Thread handedness

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

3.2 Taper

The nominal values for the taper are the following.

— Taper ratio: 3/25.

— Taper angle: 6° 52′.

— Taper slope: 12 %.

3.3 Thread profile

The thread profile is a British Standard Whitworth (BSW)[1)] form with a 55° angle. The form and thread height measurements are perpendicular to the cone surface (see Figure 3).

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

3.4 Pitch, P

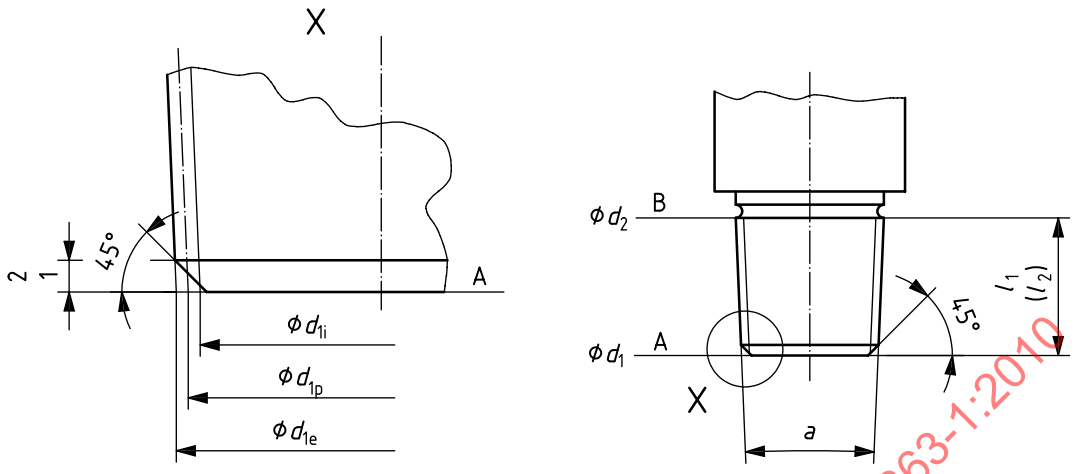
The nominal pitch is 1,814 mm (derived from $\frac{25,4}{14}$ mm) (see Figure 3).

3.5 Dimensions

Dimensions are given in Figure 1 and the values are given in Table 4.

1) 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 (ISO 68-1).

Dimensions in millimetres



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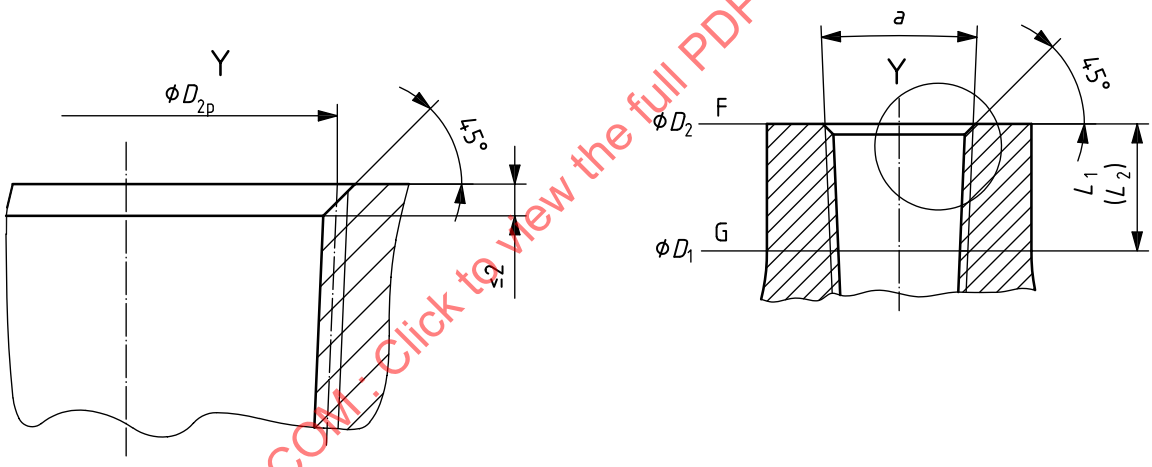

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Key

1	valve stem thread profile
2	cylinder neck thread profile
D_{2p}	pitch diameter
L_1	reference length
L_2	length of internal thread
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 d_{1e}	Pitch diameter d_{1p}	Minor diameter d_{1i}	Pitch diameter d_{2p}	Reference length l_1	Length of external thread l_2
Dimension	17,28	16,118	14,956	18,638	21	$\geqslant$ 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	Length of internal thread L_2
Dimension	17,16	15,998	14,834	18,038	17	$\geqslant$ 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	Length of external thread l_2
Dimension	25,68	24,518	23,356	27,638	26	$\geqslant$ 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	Length of internal thread L_2
Dimension	25,16	23,998	22,836	26,638	22	$\geqslant$ 22
Tolerance	$^{0}_{-0,12}$	$^{0}_{-0,12}$	$^{0}_{-0,12}$	$^{0}_{-0,12}$	—	—