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(= ISO 11363-1:2018)
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GAS CYLINDERS – 17E AND 25E TAPER THREADS FOR CONNECTION OF VALVES TO GAS CYLINDERS – PART 1: SPECIFICATIONS

SRI LANKA STANDARDS INSTITUTION

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Sri Lanka Standard

GAS CYLINDERS - 17E AND 25E TAPER THREADS FOR CONNECTION OF VALVES TO GAS CYLINDERS - PART 1 : SPECIFICATIONS.

NATIONAL FOREWORD

This draft standard was approved by the Sectoral Committee on Materials, Mechanical systems and Manufacturing Engineering and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2021- 04 - 30.

This standard is identical with ISO 11363: 2018, Gas cylinders - 17E and 25E taper threads for connection of valves to gas cylinders - Part 1: Specifications., published by International Standardization Organization (ISO).

This standard specifies the requirements for the dimensions and tolerances for taper screw threads of nominal diameter 17.4m m (designated as 17E) and 25.8mm (designated as 25E) used for the connection of valves to gas cylinders.

TERMINOLOGY AND CONVENTIONS

The text of the International Standard has been accepted as suitable for publication, without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards. Attention is therefore drawn to the following;

a) Wherever the word “International Standard” appear referring to this standard should be interpreted as “Sri Lanka Standard”.

b) The comma has been used throughout as a decimal marker. In Sri Lanka standard it is the current practice to use the full point at the basic as the decimal marker.

c) Wherever page numbers are quoted, they are ISO page numbers.

CROSS REFERENCES

There are no cross references in this document.

INTERNATIONAL STANDARD

ISO 11363-1

Second edition
2018-01

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
ISO 11363-1:2018(E)

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Foreword

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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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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.

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.

INTERNATIONAL STANDARD **ISO 11363-1:2018(E)**

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.

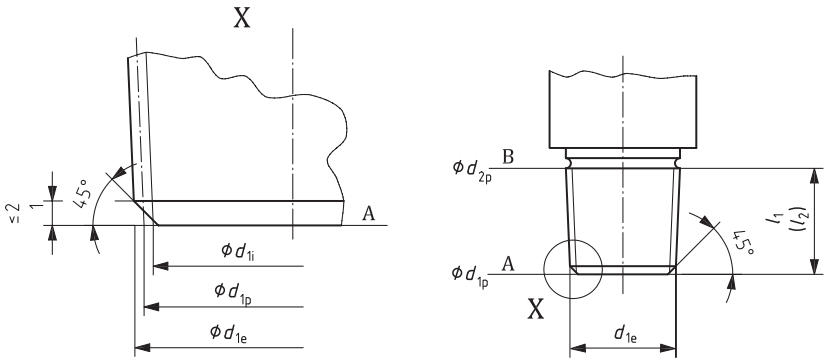
4.4 Pitch, *P*

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

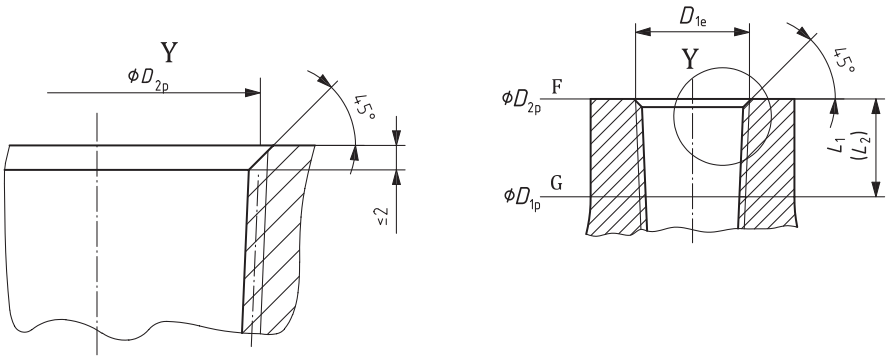
4.5 Dimensions

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

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	Minimum length of full form thread l_2
Dimension	17,28	16,118	14,956	18,638	21	≥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	≥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	≥26
Tolerance	+0,12 0	+0,12 0	+0,12 0	+0,12 0	—	—

Table 4 — Cylinder neck thread dimensions for 25E

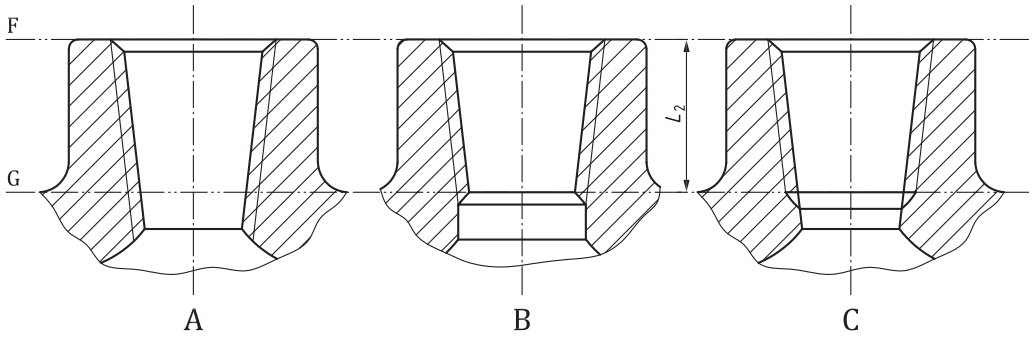
Dimensions in millimetres

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	≥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.



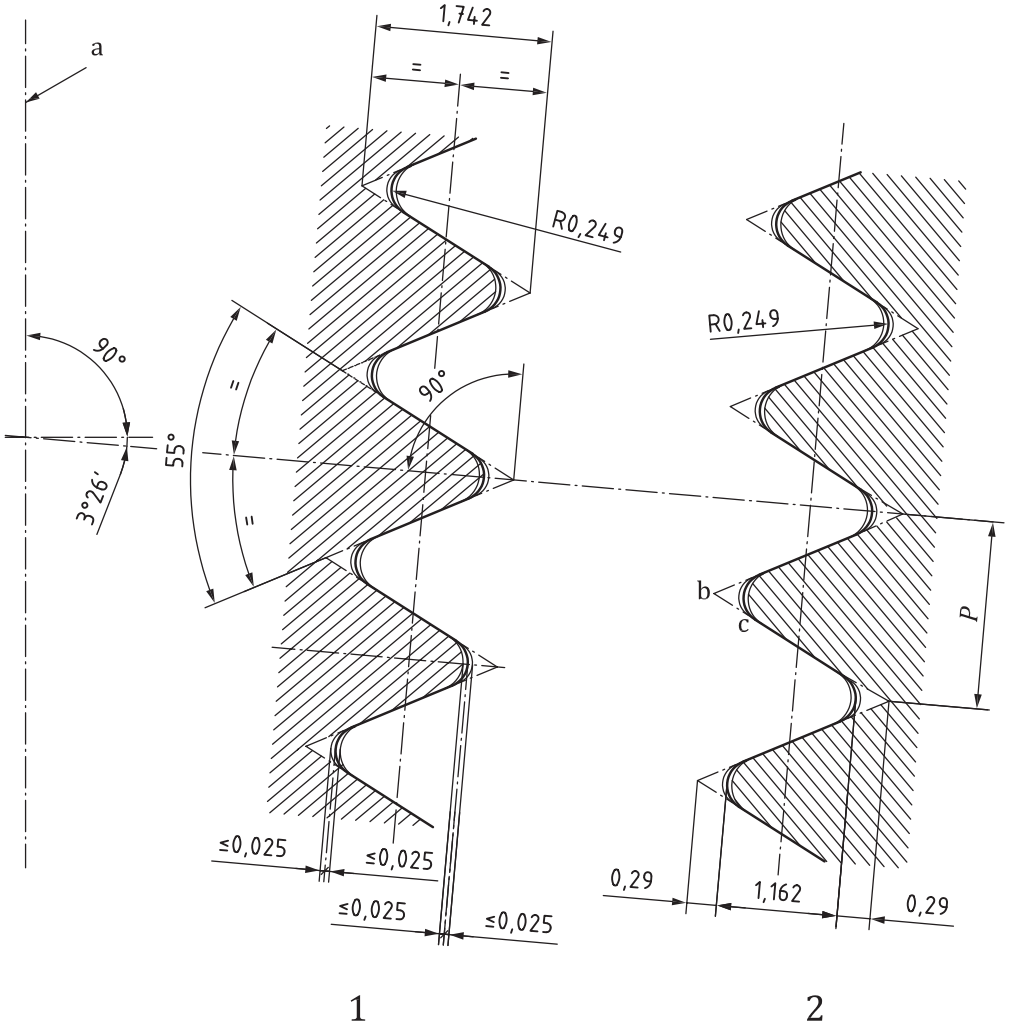
Key

A option A
B option B
C option C
L_2 length of internal thread
F reference plane, F
G reference plane, G

Figure 2 — Execution of cylinder neck threads

If option C is chosen, the taper hole shall be through-drilled into the cylinder before the thread is cut.

Dimensions in millimetres



Key

P pitch
1 valve stem thread profile
2 cylinder neck thread profile
a Thread axis.
b Basic profile.
c Design profile.

Figure 3 — Thread profiles

6 Marking

Valves and cylinders threaded in accordance with this document shall be marked by the symbol “17E” or “25E” as applicable.

Bibliography

[1] ISO 68-1, *ISO general purpose screw threads — Basic profile — Part 1: Metric screw threads*

[2] ISO 10920[1)], *Gas cylinders — 25E taper thread for connection of valves to gas cylinders — Specification*

[3] ISO 11116-1[2)], *Gas cylinders — 17E taper thread for connection of valves to gas cylinders — Part 1: Specifications*

[4] ISO 11363-2, *Gas cylinders — 17E and 25E taper threads for connection of valves to gas cylinders — Part 2: Gauge inspection*

1) Withdrawn and replaced by ISO 11363-1:2010.

2) Withdrawn and replaced by ISO 11363-1:2010.

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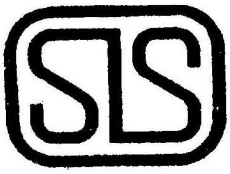

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