INTERNATIONAL STANDARD

ISO 11363-2

Second edition
2017-10

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

Part 2: Inspection gauges

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

Partie 2: Calibres de contrôle

Reference number
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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).

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 11363-2:2010), which has been technically revised.

The main change compared to the previous edition is as follows:

— Figure 9 has been corrected.

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 (an external one on the valve stem and an internal one in the cylinder neck), both shall have the same nominal taper, thread pitch and thread profile.

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

Part 2: Inspection gauges

1 Scope

This document specifies types, dimensions and principles of use of gauges, to be used in conjunction with the taper threads specified in ISO 11363-1 (i.e. 17E and 25E threads).

It provides examples of calculations for thread gauge dimensions on the large end diameter (Annex A) and draws attention to the limitations of the gauging system specified (Annex B).

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.

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11363-1 and the following apply.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
check gauge
gauge for checking dimensional conformity of inspection gauges

Note 1 to entry: This gauge is not used for gauging cylinder neck threads or valve stem threads.

3.2
inspection gauge
gauge used for the routine gauging of cylinder neck and valve stem threads

Note 1 to entry: This gauge is not used for checking other gauges.

3.3
single-part gauge
gauge of sufficient length to contact the length of full form taper threads

Note 1 to entry: These gauges are either plugs or rings, plain or threaded.

3.4
two-part gauge
gauge consisting of two separate inspection gauges, used in combination, where one is used to contact the large end of the taper cone and the other the small end

Note 1 to entry: These sets of gauges are either plugs or rings, plain or threaded.

4 Requirements

4.1 Materials

All gauges shall be manufactured from material of suitable strength, stability and hardness.

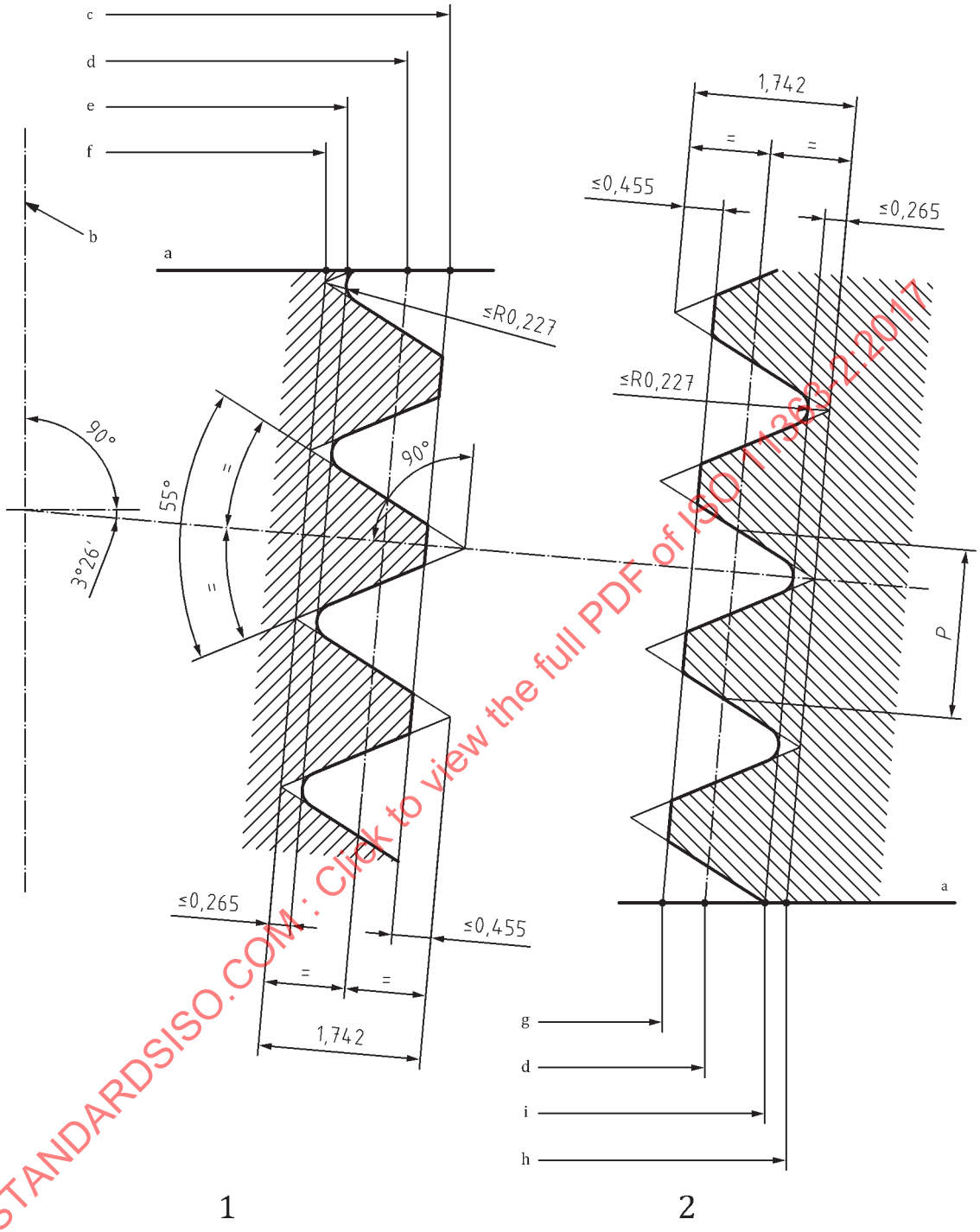
4.2 Thread profile

The thread profile of threaded inspection and check gauges shall be as shown in Figure 1.

The thread profile is a British Standard Whitworth (BSW)[1)] form with a 55° angle (see Figure 1).

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



Key

P	pitch	d	Pitch diameter.
1	plug gauge thread profile	e	Maximum minor diameter.
2	ring gauge thread profile	f	Minimum minor diameter.
a	Gauge plane.	g	Minor diameter.
b	Thread axis.	h	Maximum major diameter.
c	Major diameter.	i	Minimum major diameter.

Figure 1 — Thread profiles

4.3 Thread handedness

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

4.4 Taper

The nominal values for the taper are the following:

— taper ratio: 3/25;

— taper angle: 6° 52′;

— taper slope: 12 %.

4.5 Pitch, *P*

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

5 Gauge dimensions

The following dimensional requirements apply to gauges shown in Figure 2 to Figure 15, inclusive.

All dimensions are given in millimetres.

Tolerances for specified dimensions on all gauges are:

— all lengths, ±0,01 mm;

— diameters of inspection gauges, ±0,01 mm;

— diameters of check gauges, $^{-0,01\ \text{mm}}_{-0,02\ \text{mm}}$.

For threaded gauges, only pitch diameters are specified. For minor and major diameters see Figure 1.

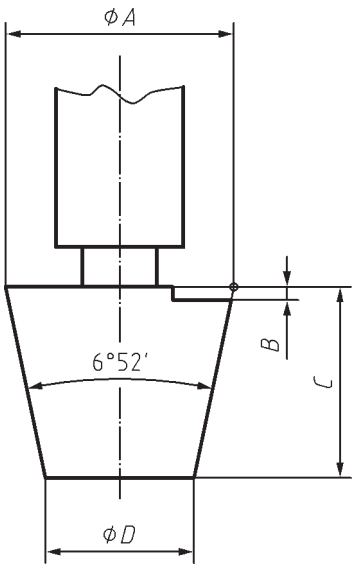
Unspecified dimensions shall be chosen by the manufacturer of the gauges.

6 Inspection gauges

6.1 Gauges for cylinder neck thread

6.1.1 Single-part plug gauges

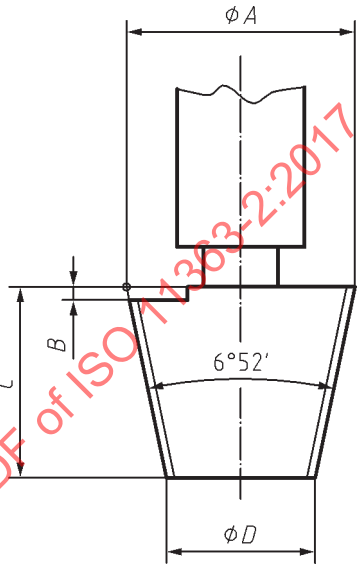
Dimensions in millimetres



Key

Thread	17E	25E
A	16,876	25,476
B	1	1
C	17	22
D	14,836	22,836

Figure 2 — Plain plug gauge for minor diameters "I-1"



Thread	17E	25E
A	18,038	26,638
B	1	1
C	17	22
D	15,998	23,998

Figure 3 — Threaded plug gauge for pitch diameters "I-2"

6.1.2 Two-part plug gauges, small end diameter

Dimensions in millimetres

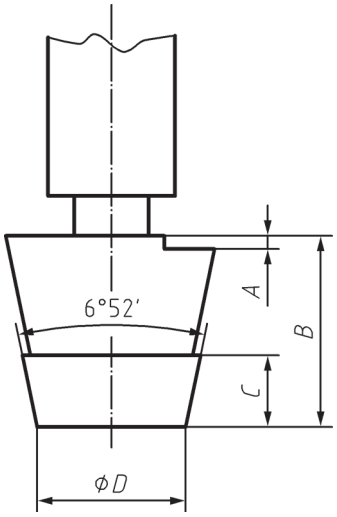


Figure 4 — Plain plug gauge for minor diameters "I-3"

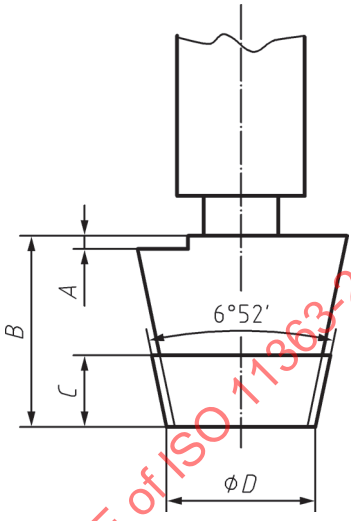


Figure 5 — Threaded plug gauge for pitch diameters "I-4"

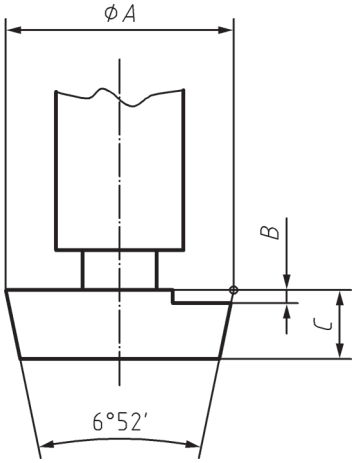
Key

Thread	17E	25E
A	1	1
B	17	22
C	8	8
D	14,836	22,836

Thread	17E	25E
A	1	1
B	17	22
C	8	8
D	15,998	23,998

6.1.3 Two-part plug gauges, large end diameter

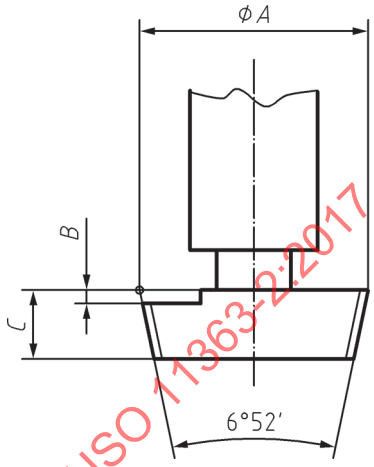
Dimensions in millimetres



Key

Thread	17E	25E
A	16,876	25,476
B	1	1
C	8	8

Figure 6 — Plain plug gauge for minor diameters "I-5"



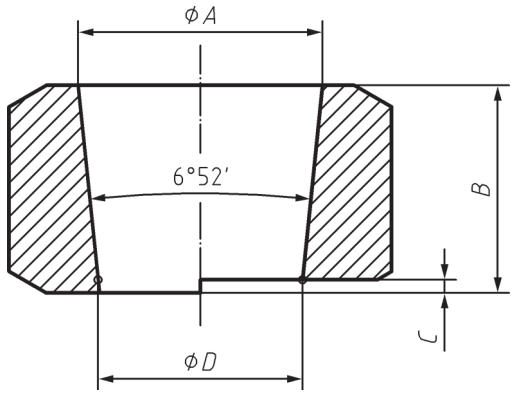
Thread	17E	25E
A	18,038	26,638
B	1	1
C	8	8

Figure 7 — Threaded plug gauge for pitch diameters "I-6"

6.2 Gauges for valve stem thread

6.2.1 Single-part ring gauges

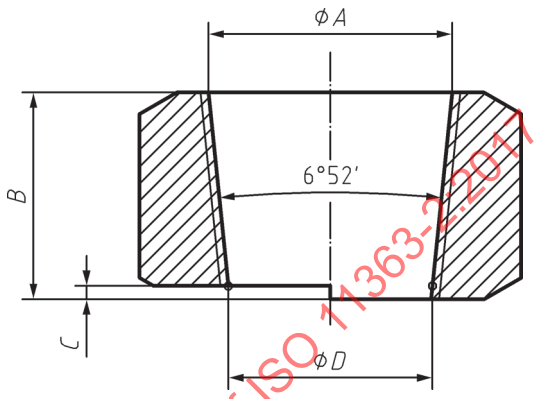
Dimensions in millimetres



Key

Thread	17E	25E
A	19,80	28,8
B	21	26
C	1	1
D	17,40	25,8

Figure 8 — Plain ring gauge for major diameters "I-7"

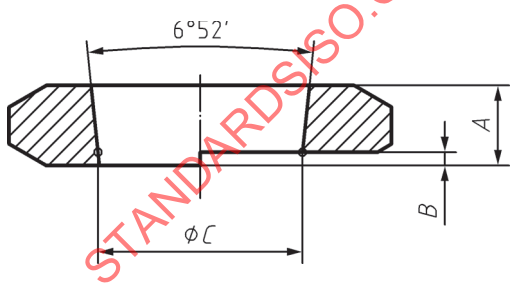


Thread	17E	25E
A	18,638	27,638
B	21	26
C	1	1
D	16,238	24,638

Figure 9 — Threaded ring gauge for pitch diameters "I-8"

6.2.2 Two-part ring gauges, small end diameter

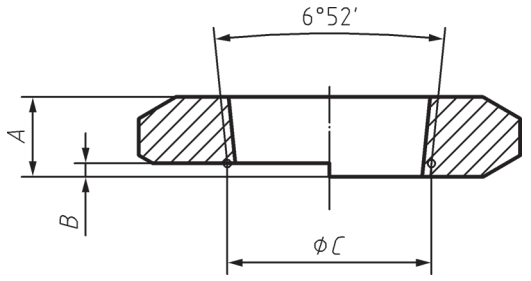
Dimensions in millimetres



Key

Thread	17E	25E
A	8	8
B	1	1
C	17,40	25,8

Figure 10 — Plain ring gauge for major diameters "I-9"

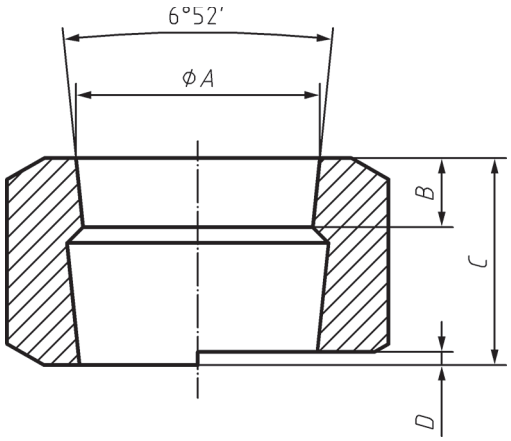


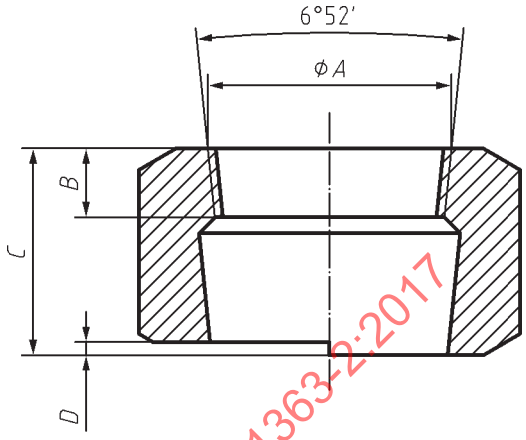
Thread	17E	25E
A	8	8
B	1	1
C	16,238	24,638

Figure 11 — Threaded ring gauge for pitch diameters "I-10"

6.2.3 Two-part ring gauges, large end diameter

Dimensions in millimetres





Key

Thread	17E	25E
A	19,8	28,8
B	8	8
C	21	26
D	1	1

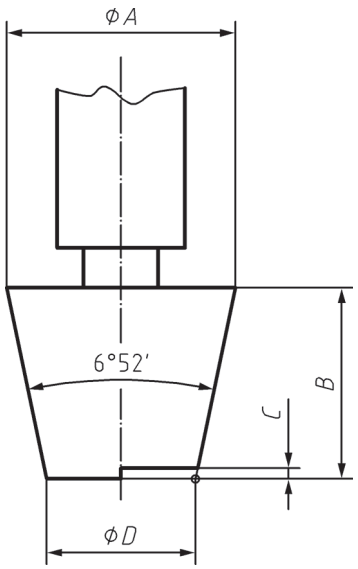
Figure 12 — Plain ring gauge for major diameters "I-11"

Thread	17E	25E
A	18,638	27,638
B	8	8
C	21	26
D	1	1

Figure 13 — Threaded ring gauge for pitch diameters "I-12"

7 Check gauges

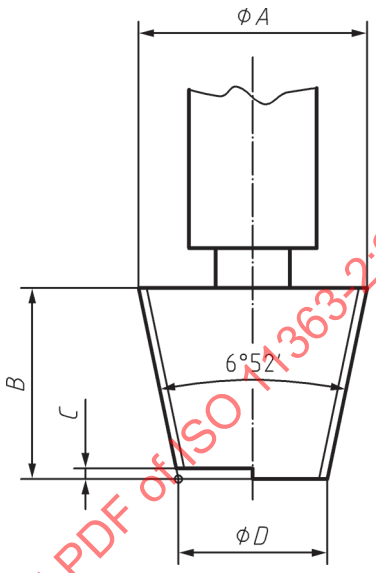
Dimensions in millimetres



Key

Thread	17E	25E
A	19,80	28,8
B	20	25
C	0,25	0,25
D	17,40	25,8

Figure 14 — Plain plug check gauge "M-1"



Thread	17E	25E
A	18,638	27,638
B	20	25
C	0,25	0,25
D	16,238	24,638

Figure 15 — Threaded plug check gauge "M-2"

8 Use of inspection gauges

8.1 Plain gauges

Plain gauges shall be lightly pressed into position or over the thread being gauged. Care shall be taken not to use undue force.

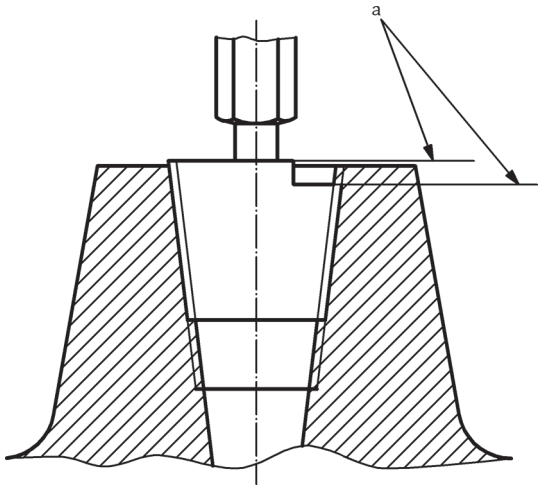
8.2 Threaded plug gauges

Threaded plug gauges shall be screwed into, or over, the thread being gauged. Care shall be taken not to use undue force.

8.3 Accept or reject criteria using plug gauges

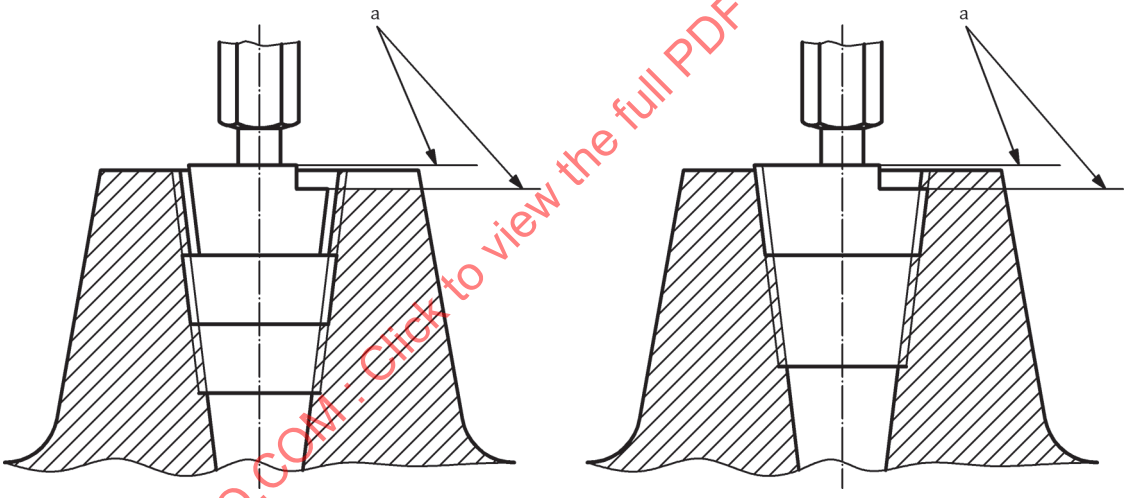
Thread acceptability is determined by the position of the plane at the mouth of the cylinder neck relative to the test surfaces of the gauge.

To meet acceptability, when using a plug gauge, this plane shall be flush with, or fall between, the test surfaces of the gauge when the gauge is fitted to the thread (see Figures 16 and 17).



a Test surface.

Figure 16 — Use of single-part plug gauge



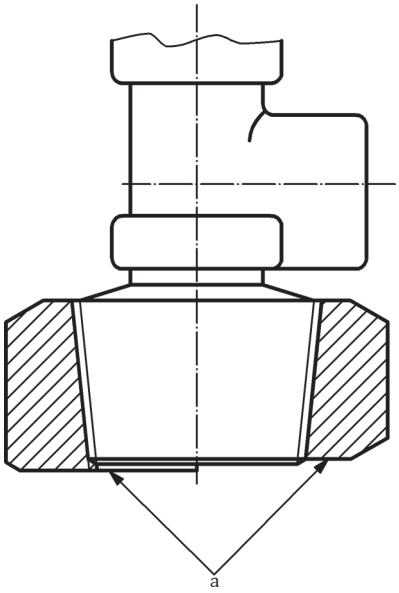
a Test surface.

Figure 17 — Use of two-part plug gauge

8.4 Accept or reject criteria using ring gauges

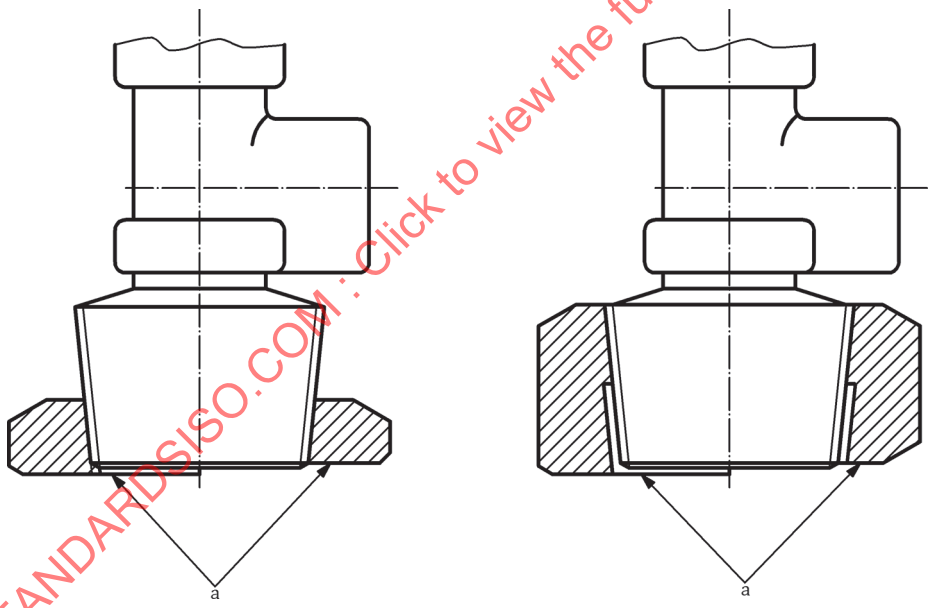
Thread acceptability is determined by the position of the plane at the flat small end of the stem cone base relative to the test surfaces of the gauge.

To meet acceptability, when using a ring gauge, this plane shall be flush with, or fall between, the test surfaces of the gauge when the gauge is fitted to the thread (see Figures 18 and 19).



a Test surface.

Figure 18 — Use of single-part ring gauge



a Test surface.

Figure 19 — Use of two-part ring gauge

9 Verification of inspection gauges

9.1 General

During use inspection, gauges will wear and can be damaged. The user shall ensure that the gauges are checked regularly to confirm that they remain within the specified dimensions. Frequency of checks required will depend upon usage and shall be the responsibility of the user.

9.2 Plug gauges

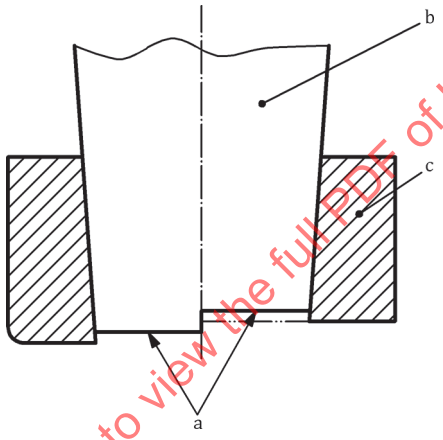
Verification of inspection plug gauges shall be carried out directly, using optical or other suitable equipment.

9.3 Ring gauges

Verification of inspection ring gauges cannot be carried out directly; check plug gauges shall be used, as specified in 9.4.

9.4 Use of check plug gauges

The plain check plug gauge shall be placed into the plain inspection ring gauge and the threaded check plug gauge shall be screwed into the threaded inspection ring gauge. The inner stepped surface of the inspection ring gauge test surface shall be flush with, or within, either of the two test surfaces of the check gauge (see Figure 20). Undue force shall not be used.



a Test surface.
b Check plug gauge.
c Inspection ring gauge.

Figure 20 — Use of check plug gauges

10 Identification

10.1 Inspection gauges

Inspection gauges that conform to this document shall be identified by the following information:

— "ISO 11363";

— "25E" or "17E" as appropriate;

— "I-*n*" (where *n* is the appropriate number of the gauge, as shown in Figures 2 to 13, e.g. "I-3").

10.2 Check gauges

Check gauges shall be identified by the following information:

— "ISO 11363";

— "25E" or "17E" as appropriate;

— “M-*n*” (where *n* is the appropriate number of the gauge, as shown in Figures 14 and 15, e.g. “M-2”).