BRITISH STANDARD

BS EN
629-2 : 1996

Transportable gas cylinders — 25E taper thread for connection of valves to gas cylinders

Part 2. Gauge inspection

The European Standard EN 629-2 : 1996 has the status of a British Standard

ICS 23.020.30

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee PVE/3, Gas containers, to Subcommittee PVE/3/1, Valve fittings for gas containers, upon which the following bodies were represented:

Aluminium Federation
British Compressed Gases Association
Health and Safety Executive
Ministry of Defence
Co-opted members

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Contents

National foreword

This British Standard has been prepared by Subcommittee PVE/3/1 and is the English language version of EN 629-2 : 1996 *Transportable gas cylinders — 25E taper thread for connection to gas cylinders — Part 2: Gauge inspection*, published by the European Committee for Standardization (CEN).

EN 629-2 was produced as a result of international discussion in which the United Kingdom took part.

Cross-references

Publication referred to	Corresponding British Standard
EN 629-1 : 1996	BS EN 629 *Transportable gas cylinders — 25E taper thread for connection to gas cylinders* Part 1 : 1996 *Specification*

Compliance with a British Standard does not of itself confer immunity from legal obligations.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 629-2

June 1996

ICS 23.020.30

Descriptors: Gas cylinders, gas valves, junctions, tapered screw threads, specifications, dimensions, dimensional measurements, standard gauges

English version

Transportable gas cylinders — 25E taper thread for connection of valves to gas cylinders — Part 2: Gauge inspection

Bouteilles à gaz transportables — Filetages coniques 25E pour le raccordement des robinets sur les bouteilles à gaz — Partie 2: Calibres de vérification

Ortsbewegliche Gasflaschen — 25E kegeliges Gewinde zum Anschluß von Ventilen an Gasflaschen — Teil 2: Lehrenprüfung

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 629-2 : 1996 E

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 23, Transportable gas cylinders, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 1996, and conflicting national standards shall be withdrawn at the latest by December 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Contents

Introduction

This European Standard is a two part standard, belonging to a series of standards specifying thread dimensions and gauge requirements:

– Part 1: *Specification*;

– Part 2: *Gauge inspection*.

1 Scope

This European Standard specifies types, dimensions and principles of use of gauges, to be used in conjunction with the taper thread specified in EN 629-1.

Annex A provides examples of calculations for thread gauge dimensions on the large end diameter.

Annex B draws attention to the limitations of the gauging system specified.

2 Normative reference

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 629-1 *Transportable gas cylinders — 25E taper thread for connection of valves to gas cylinders*
Part 1: Specification

3 Definitions

For the purposes of this standard, the following definitions apply.

3.1 inspection gauge

Gauge used for the routine gauging of cylinder neck and valve stem threads. This gauge is not used for checking other gauges.

3.2 check gauge

Gauge for checking dimensional conformity of inspection ring gauges. This gauge is not used for gauging cylinder neck threads.

3.3 single part gauge

Gauge of sufficient length to contact the full length of taper thread. These gauges are plug or ring, plain or threaded.

3.4 two part gauges

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. These sets of gauges are plug or ring, 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.

4.3 Thread rotation

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

4.4 Taper

– Taper ratio: 3 / 25;

– Taper angle: 6° 52';

– Taper slope: 12%.

4.5 Thread profile

The thread profile has a 55° angle. The form and thread height measurements are perpendicular to the cone surface (see figure 1).

4.6 Pitch *P*

The 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.

5.1 All dimensions are given in millimetres.

5.2 Tolerances for specified dimensions on all gauges are:

– $\pm$ 0,01 mm on all lengths;

– $\pm$ 0,01 mm on diameters of inspection gauges;

– $^{-0{,}01}_{-0{,}02}$ mm on diameters of check gauges.

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

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

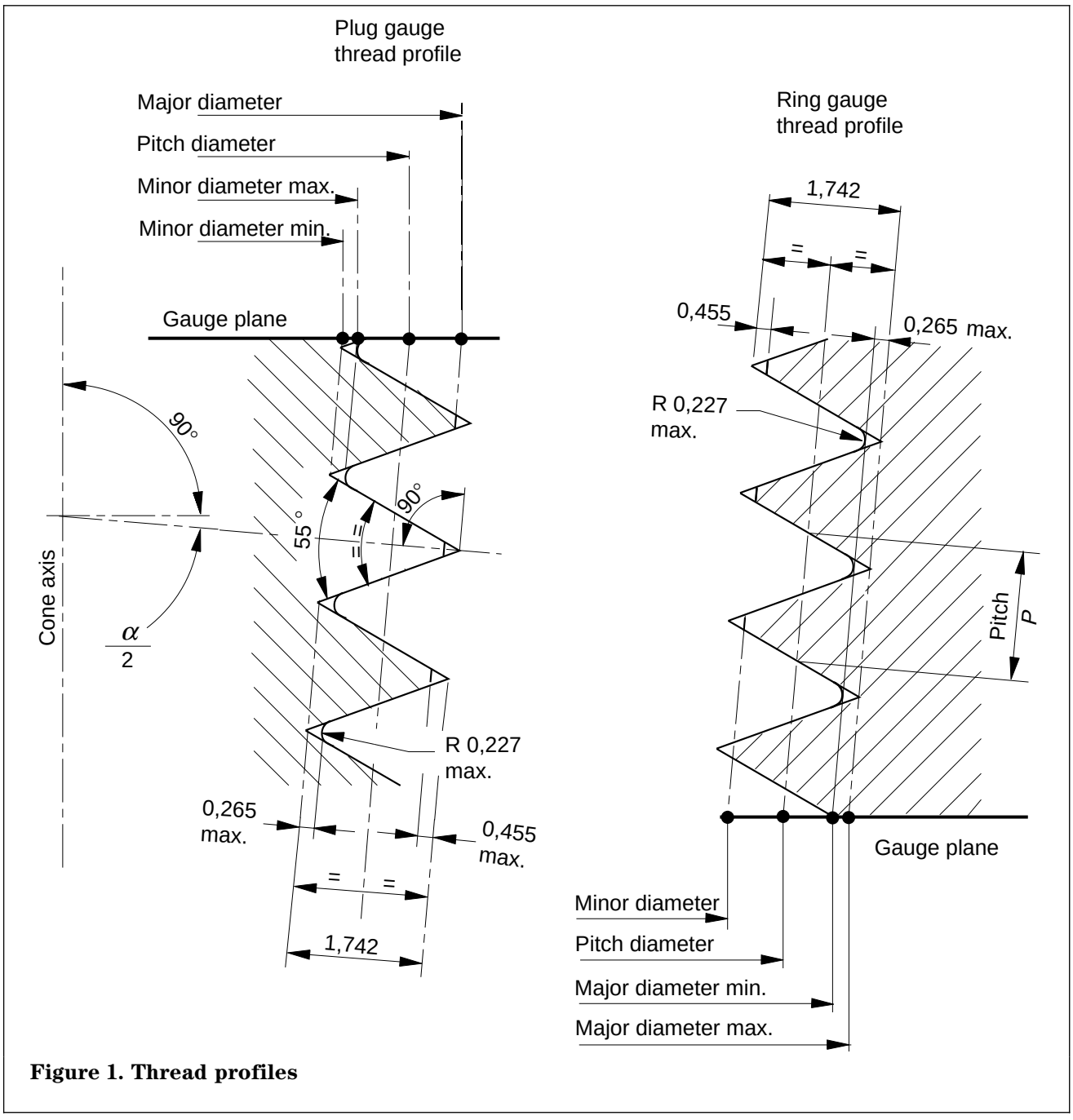


Figure 1. Thread profiles

6 Inspection gauges

All dimensions are given in millimetres

6.1 Cylinder neck thread

6.1.1 *Single part plug gauges*

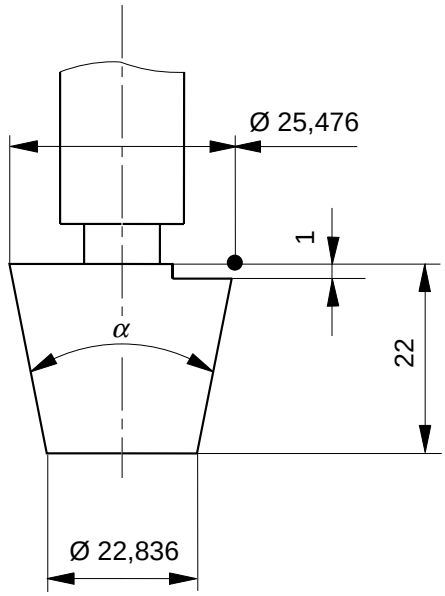


Figure 2. Plain plug gauge for minor diameters 'I-1'

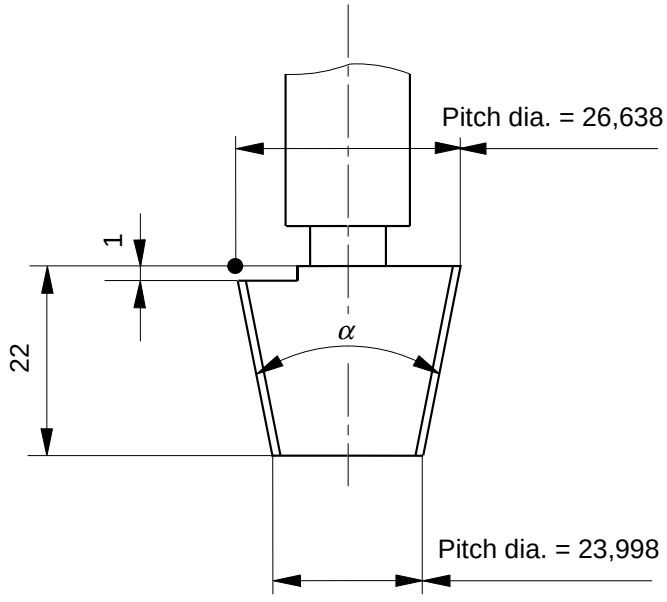


Figure 3. Threaded plug gauge for pitch diameters 'I-2'

6.1.2 ***Two part plug gauges — small end diameter***

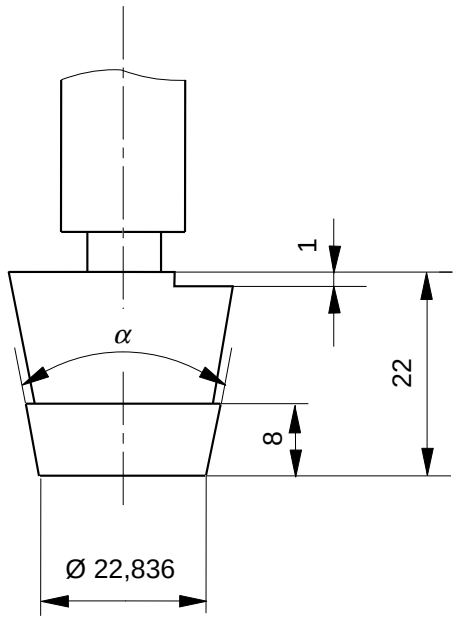


Figure 4. Plain plug gauge for minor diameters 'I-3'

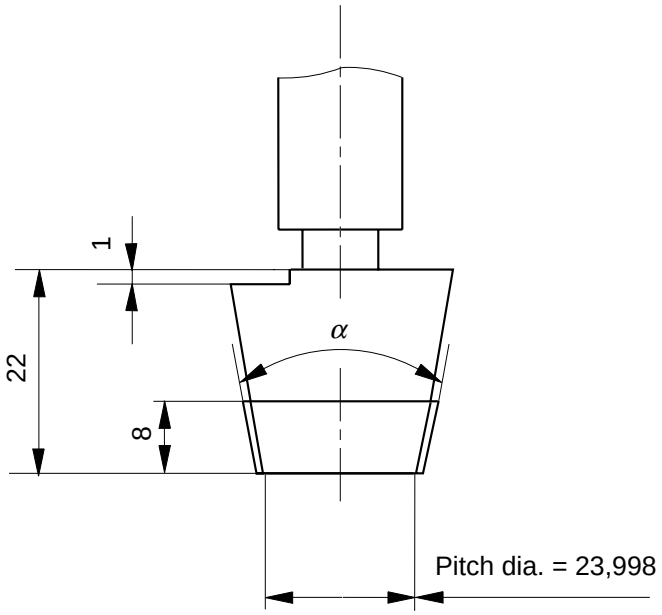


Figure 5. Threaded gauge for pitch diameters 'I-4'

6.1.3 ***Two part plug gauges — Large end diameter***

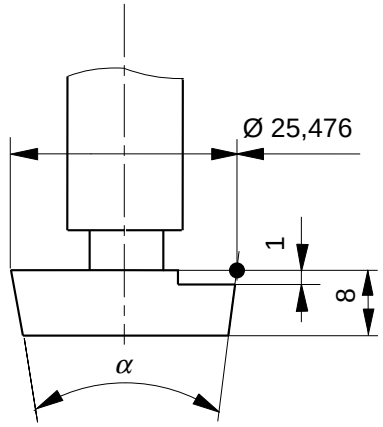


Figure 6. Plain plug gauge for minor diameters 'I-5'

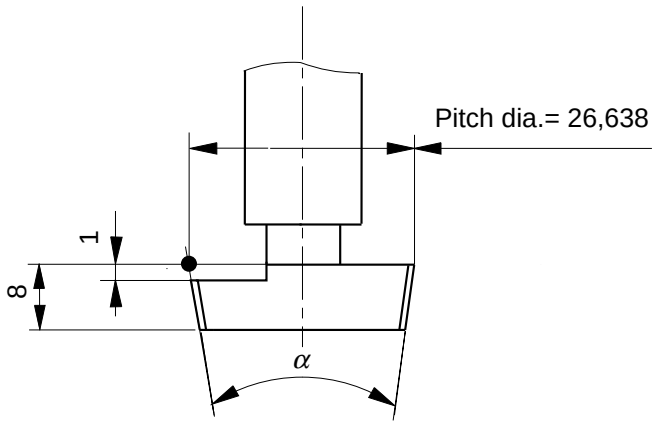


Figure 7. Threaded gauge for pitch diameters 'I-6'

6.2 Valve stem thread

6.2.1 ***Single part ring gauges***

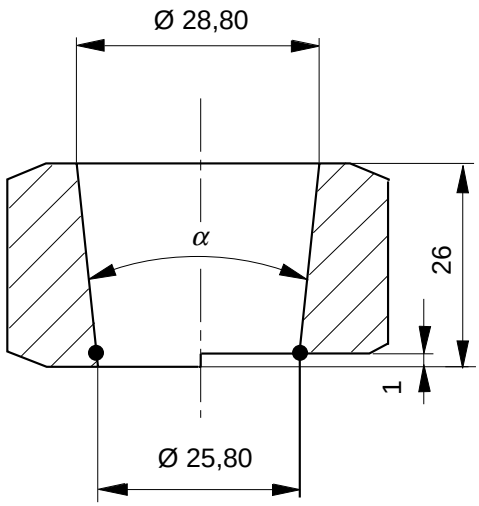


Figure 8. Plain ring gauge for major diameter 'I-7'

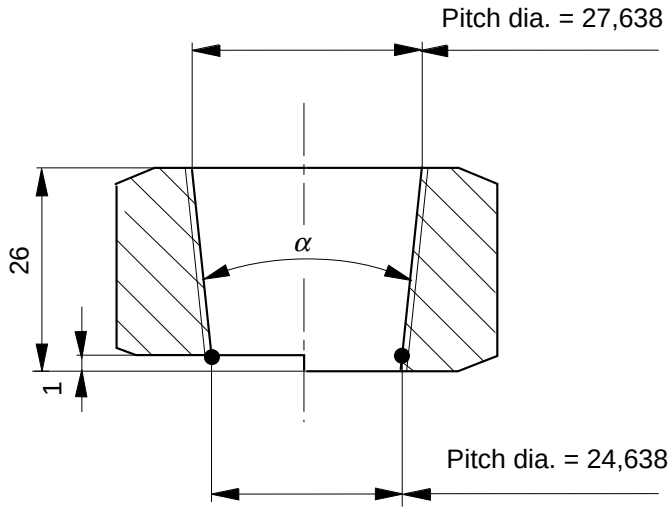


Figure 9. Threaded ring gauge for pitch diameter 'I-8'

6.2.2 ***Two part ring gauges — small end diameter***

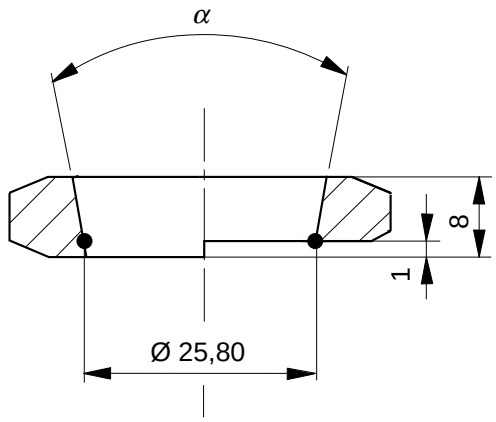


Figure 10. Plain ring gauge for major diameter 'I-9'

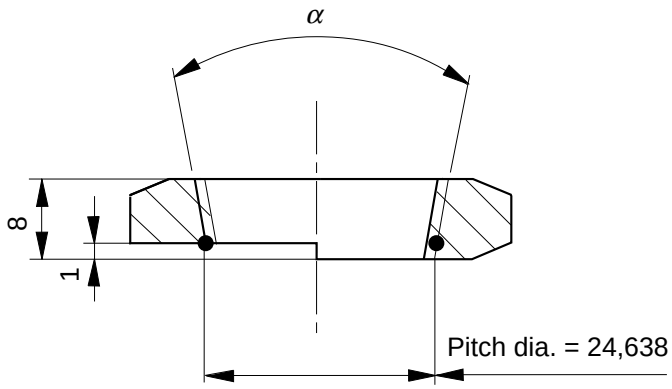


Figure 11. Threaded ring gauge for pitch diameter 'I-10'

6.2.3 Two part ring gauges — large end diameter

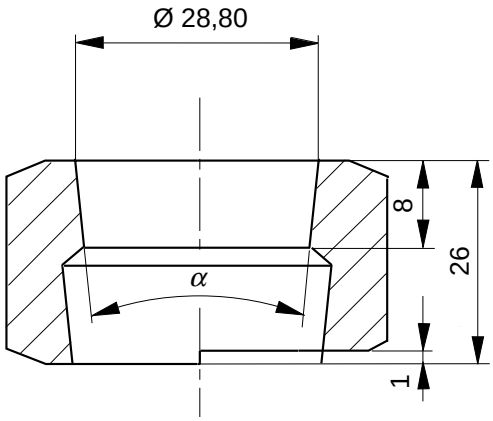


Figure 12. Plain ring gauge for major diameter 'I-11'

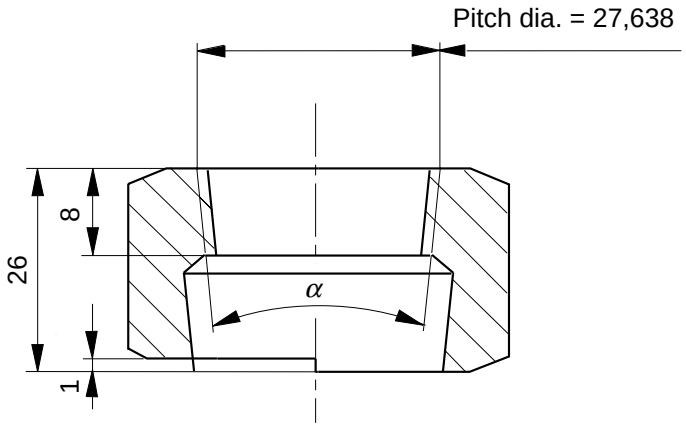


Figure 13. Threaded ring gauge for pitch diameter 'I-12'

6.3 Check gauges

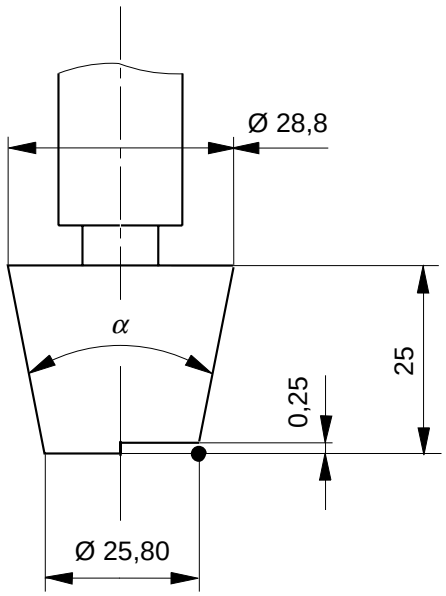


Figure 14. Plain check gauge 'M-1'

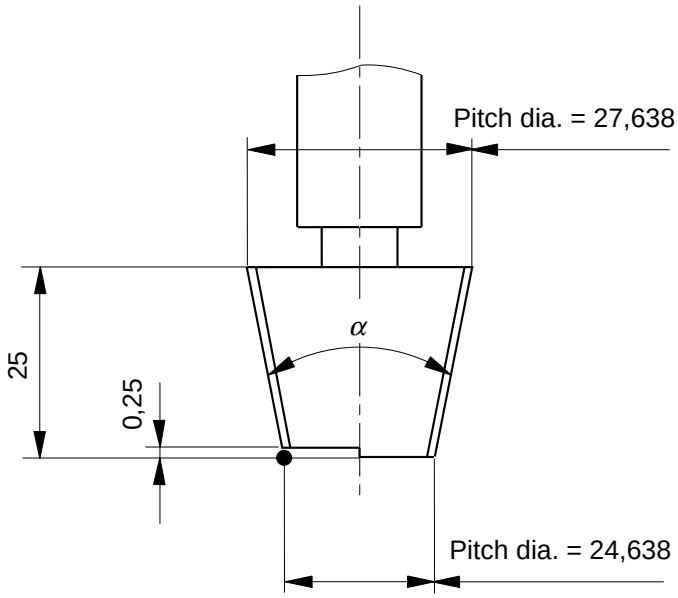


Figure 15. Threaded check gauge 'M-2'

7 Use of inspection gauges

7.1 Plain gauges

Plain gauges shall be lightly pressed into position or over the thread being gauged. Undue force shall not be used.

7.2 Threaded gauges

Threaded gauges shall be screwed into or over the thread being gauged. Undue force shall not be used.

7.3 Accept or reject criteria, using plug gauges

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

The thread shall be considered acceptable to the gauge if this plane is flush with or falls between the test surfaces of the gauge when the gauge is fitted to the thread (see figures 16 and 17).

7.4 Accept or reject criteria, using ring gauges

Thread acceptability to gauge 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.

The thread shall be considered acceptable to the gauge if this plane is flush with or falls between the test surfaces of the gauge when the gauge is fitted to the thread (see figures 18 and 19).

8 Verification of inspection gauges

8.1 General

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

8.2 Plug gauges

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

8.3 Ring gauges

Verification of inspection ring gauges cannot be carried out directly. Two check plug gauges, as shown in figure 14 and figure 15, shall be used.

8.4 Use of check 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.

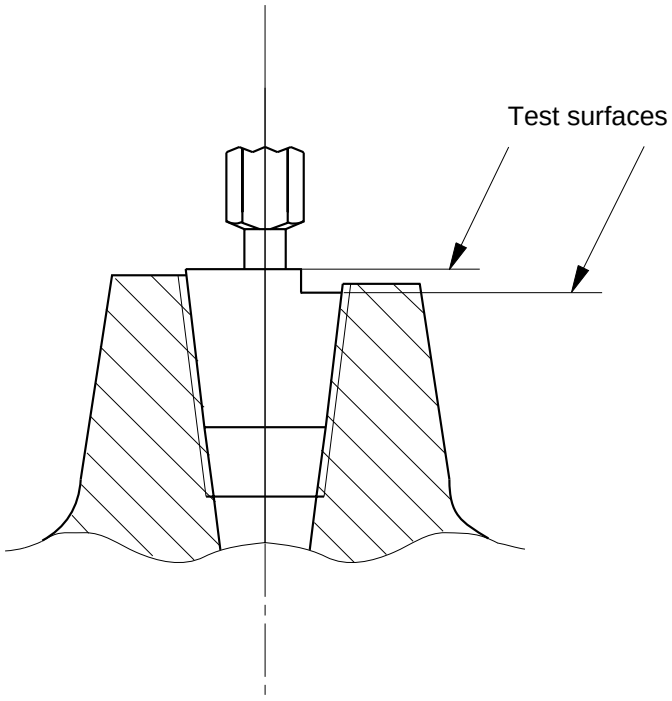


Figure 16. Use of single part plug gauge

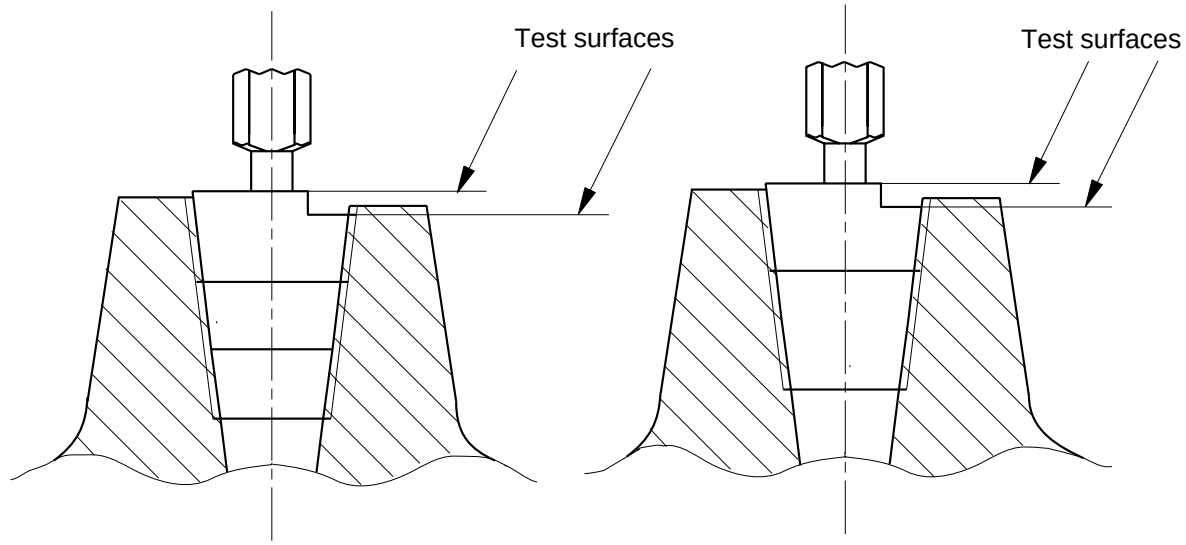


Figure 17. Use of two part plug gauge

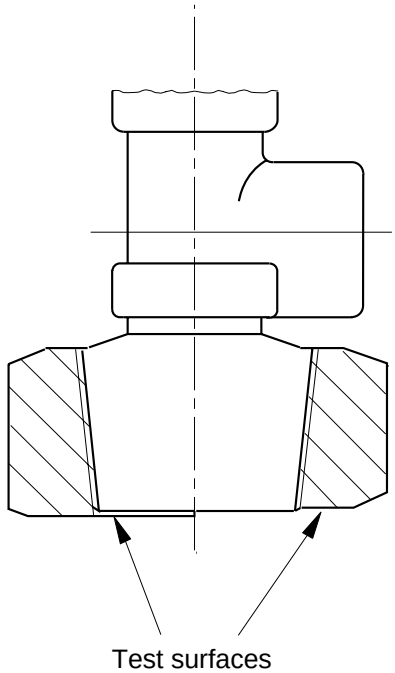


Figure 18. Use of single part ring gauge

9 Identification

9.1 Inspection gauges

Inspection gauges shall be identified by the following information:

– 'EN 629';

– '25E';

– 'I-' (followed by the appropriate number of the gauge, e.g. 'I-3').

9.2 Check gauges

Check gauges shall be identified by the following information:

– 'EN 629';

– '25E';

– 'M-' (followed by the appropriate number of the gauge, e.g. 'M-2').

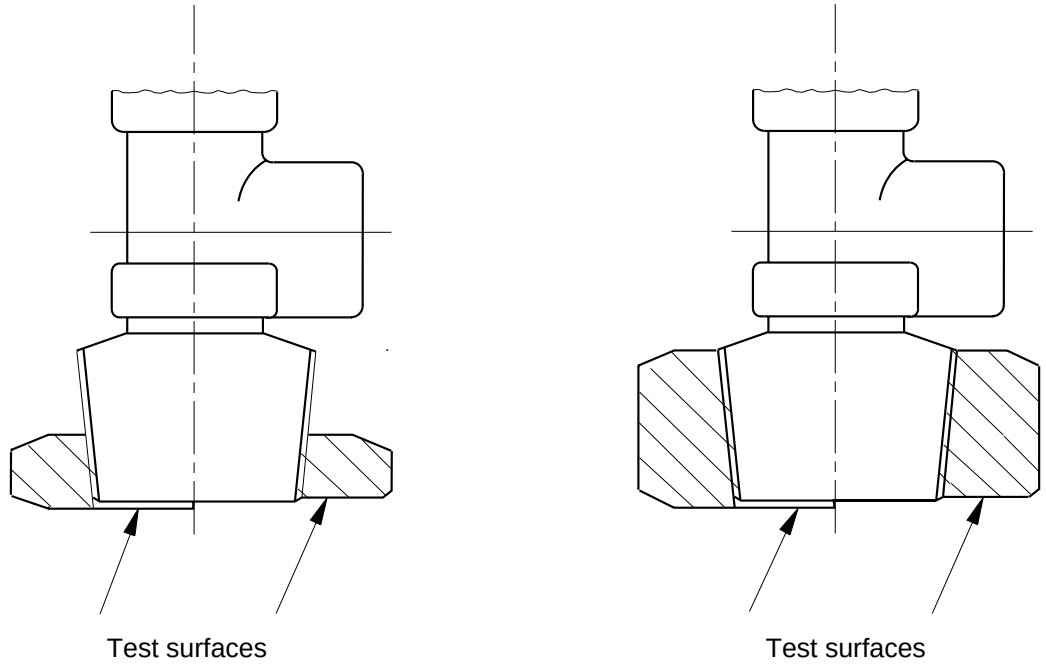


Figure 19. Use of two part ring gauge

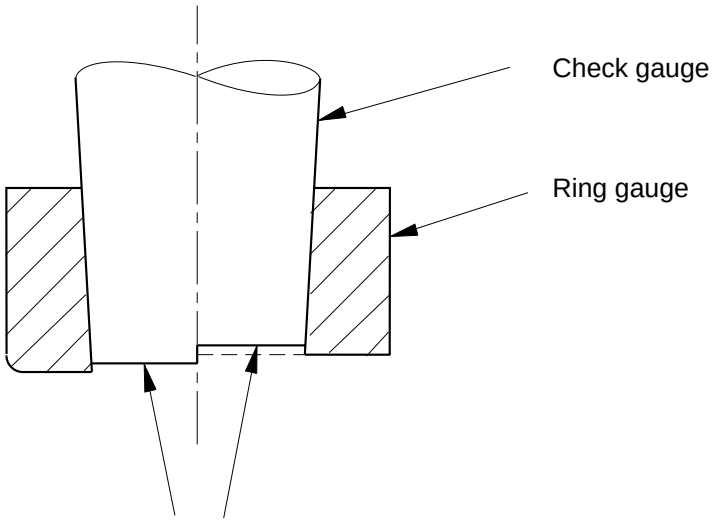


Figure 20. Use of check gauges

Annex A (informative)

Examples of calculation for thread gauge dimensions on the large end diameter

In the following examples the mid allowable value for pitch diameter is used. In practice the true pitch diameter is determined and used for calculation.

All dimensions are given in millimetres.

A.1 Threaded plug gauge 'I-2' according to figure 3

Thread profile in accordance with figure 1.

Pitch diameter: 26,638; tolerance $\pm$ 0,01

Major diameter: 26,638 + 1,742 − (2 × 0,455) = 27,47; tolerance $\pm$ 0,01

Minor diameter, theoretical, crest (Minor diameter − Minimum dimension): 26,638 − 1,742 = 24,896.

Minor diameter − Maximum dimension :
26,638 − 1,742 + (2 × 0,265) = 25,426

A.2 Threaded ring gauge 'I-8' according to figure 9

Thread profile in accordance with figure 1.

Pitch diameter: 27,638; tolerance $\pm$ 0,01

Minor diameter: 27,638 − 1,742 + (2 × 0,455) = 26,806; tolerance $\pm$ 0,01

Major diameter, theoretical, crest (Major diameter − Maximum dimension): 27,638 + 1,742 = 29,38

Major diameter − Minimum dimension:
27,638 + 1,742 − (2 × 0,265) = 28,85

A.3 Threaded check gauge 'M-2' according to figure 15

Thread profile in accordance with figure 1.

Pitch diameter: 27,638; tolerance: $^{-0,01}_{-0,02}$

Major diameter: 27,638 + 1,742 − (2 × 0,455) = 28,47; tolerance $^{-0,01}_{-0,02}$

Minor diameter, theoretical, crest (Minor diameter − Minimum dimension): 27,638 − 1,742 = 25,896

Minor diameter − Maximum dimension:
27,638 − 1,742 + (2 × 0,265) = 26,426

Annex B (informative)

Limitations of gauging system

The purpose of this annex is to draw attention to the limitations of the gauging system specified in this standard.

Taper threads are more difficult to gauge than parallel threads. It is not practical to provide a gauging system which will gauge all aspects of a taper thread.

The gauging system specified in this standard is considered the minimum practical gauging to verify dimensions of a taper thread.

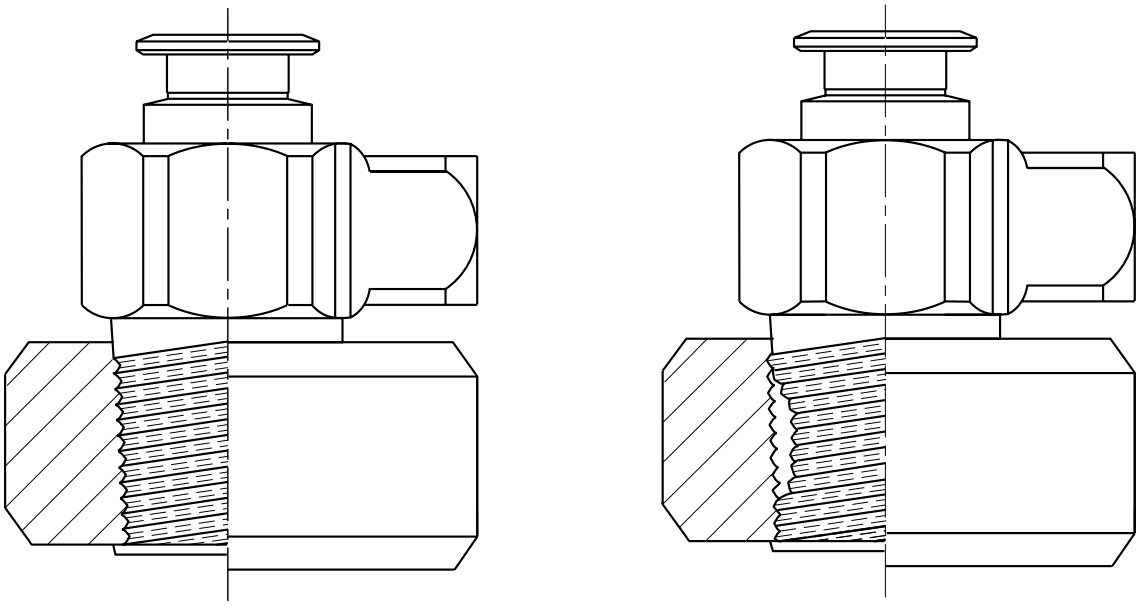
The following aspects of taper threads are amongst those not checked by gauges to this standard:

- out of tolerance on minor diameter on the stem;
- out of tolerance on major diameter on the neck;
- ovality on threads;
- die withdrawal lines;
- surface finish;
- 'waisting' of the taper form.

Any of the above could cause difficulties in achieving a gas tight seal in service.

If difficulties are experienced in service, it is recommended that additional gauging and/or inspection techniques are used to investigate the above aspects. Optical visual techniques can often be used.

Another useful inspection technique which can be applied to stem threads is to modify a pair of single part ring gauges (see **6.2.1**), by removing a 90° segment. This allows visual examination of the thread for mating with the gauge and is effective in highlighting 'waisting' or other errors in the taper form. Examples of this type of gauge are given in figure B 1.



Correct form

'Waisting' of thread

Figure B.1 Example of single part ring gauge with 90° segment removed

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