BRITISH STANDARD

BS EN ISO 7083 : 1995
BS 308 : Section 3.6 : 1995

Technical drawings — Symbols for geometrical tolerancing Proportions and dimensions

The European Standard EN ISO 7083 : 1994 has the status of a British Standard

BSI STANDARDS

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee TDE/4, Engineering drawing practice, upon which the following bodies were represented:

Atomic Weapons Establishment
British Gas plc
British Standards Society
Drawing Office Material Manufacturers' and Dealers' Association
Electricity Association
Gauge and Tool Makers' Association
HEVAC Association
Institution of Chemical Engineers
Institution of Engineering Designers
Power Generation Contractors' Association
Society of British Aerospace Companies Ltd.
University of Warwick

This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on
15 October 1995

The following BSI references relate to the work on this standard:
Committee reference TDE/4
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Amendments issued since publication

Amd. No.	Date	Text affected

Contents

National foreword

This British Standard has been prepared under the direction of the Engineering Sector Board and is the English language version of EN ISO 7083 : 1995 *Technical drawings — Symbols for geometrical tolerancing — Proportions and dimensions*, published by the European Committee for Standardization (CEN). It is identical with ISO 7083 : 1983, published by the International Organization for Standardization (ISO).

This British Standard partially supersedes BS 308 : Part 3. It is envisaged that when the full range of European Standards on technical drawing is implemented BS 308 will be withdrawn.

Cross-references

Publication referred to	Corresponding British Standard
ISO 1101 : 1983	BS 308 *Engineering drawing practice* Part 3 : 1990 *Recommendations for geometrical tolerancing*
ISO 3098-1 : 1974	Part 1 : 1993 *Recommendations for general principles*
ISO 5459 : 1981	Part 3 : 1990 *Recommendations for geometrical tolerancing*

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

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 7083

October 1994

ICS 01.100.10

Descriptors: Technical drawings, graphic methods, form tolerances, symbols, dimensions

English version

Technical drawings — Symbols for geometrical tolerancing — Proportions and dimensions

(ISO 7083 : 1983)

Dessins techniques — Symboles pour tolérancement géometrique — Proportions and dimensions
(ISO 7083 : 1983)

Technische Zeichnungen — Symbole für Form-und Lagetolerierung — Verhältnisse und Maße
(ISO 7083 : 1983)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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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

Foreword

This European Standard was taken over by CEN from the work of ISO/TC 10, Technical drawings, product definition and related documentation, of the International Standards Organization (ISO).

The Technical Board had decided to submit the final draft for Formal Vote. The result was positive.

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 April 1995, and conflicting national standards shall be withdrawn at the latest by April 1995.

According to the CEN/CENELEC Internal Regulations, 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, United Kingdom.

Technical drawings — Symbols for geometrical tolerancing — Proportions and dimensions

0 Introduction

The purpose of this International Standard is to give instructions for the correct execution of the symbols for geometrical tolerancing on technical drawings (see ISO 1101 and ISO 5459), and to harmonize the dimensioning of these symbols with the lettering used for dimensioning and other indications on the drawing.

1 Scope and field of application

This International Standard specifies the recommended proportions and lays down the dimensions for the symbols used to indicate geometrical tolerancing on technical drawings.

The symbols and their lettering may be hand-written (using a rule for drawing the frames) or executed by means of other appropriate methods (for example, stencils, transfers, mechanical drawing, etc.).

The dimensions of the symbols are based on the standard heights of lettering given in ISO 3098/1.

2 References

ISO 1101, *Technical drawings — Geometrical tolerancing — Tolerancing of form, orientation, location and runout — Generalities, definitions, symbols, indication on drawings.*[1)]

ISO 3098/1, *Technical drawings — Lettering — Part 1: Currently used characters.*

ISO 5459, *Technical drawings — Geometrical tolerancing — Datums and datum-systems for geometrical tolerances.*

3 General conditions

3.1 The lettering used with the symbols shall be in accordance with the specifications of ISO 3098/1.

3.2 It is recommended that on any one drawing the height, thickness of lines and type of lettering with the symbols be equal to those applied for the dimensioning and other indications on that drawing.

4 Proportions

Examples for the proportions of the symbols and frames for use with lettering type B, vertical or inclined, are shown in figures 1 to 21.

The configurations are depicted on a grid with a spacing equal to the thickness of line. The design of the inscribed characters is mostly not shown, but shall be the same as in ISO 3098/1 for lettering type B, vertical or inclined.

For the alternative lettering type A, vertical or inclined, appropriate grids should be used, but it is understood that

- frames are always drawn as squares or rectangles;
- symbols for toleranced characteristics and additional symbols (see ISO 1101) are always to be depicted as shown in figures 1 to 21.

1) At present at the stage of draft. (Revision of ISO/R 1101/1-1969.)

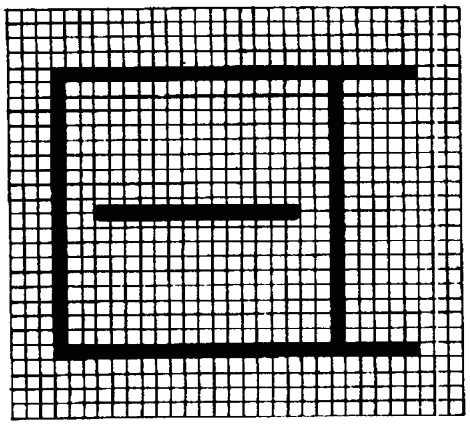


Figure 1 — Straightness

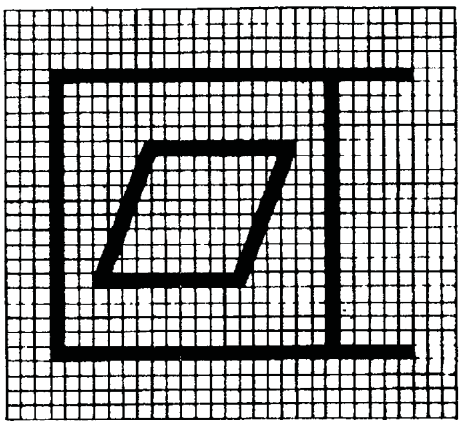


Figure 2 — Flatness

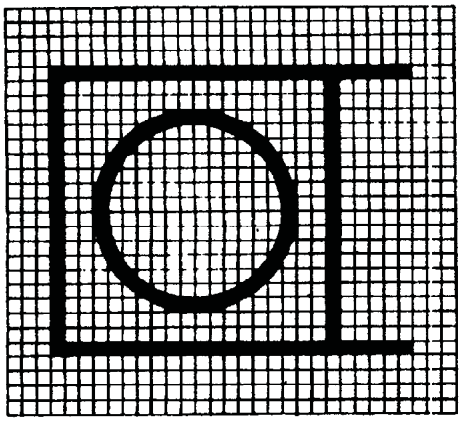


Figure 3 — Circularity (roundness)

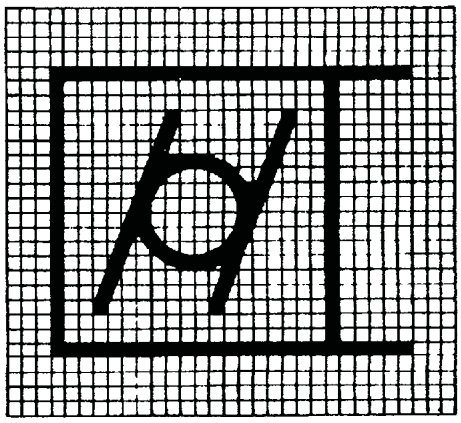


Figure 4 — Cylindricity

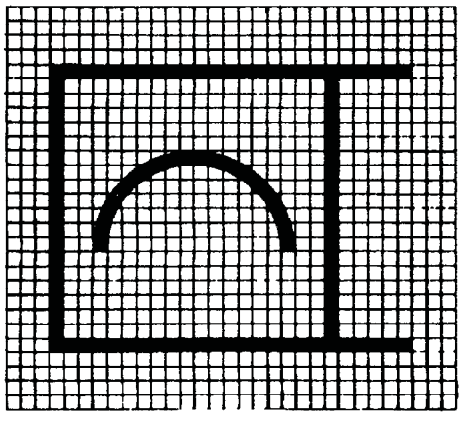


Figure 5 — Profile of any line

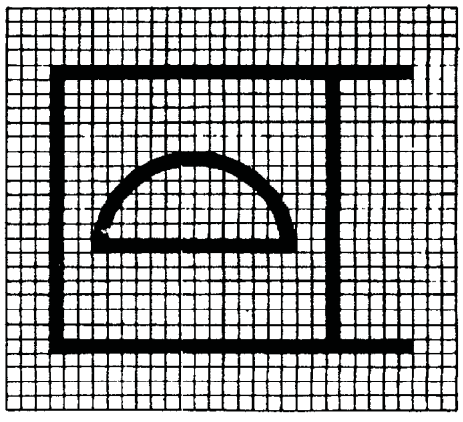


Figure 6 — Profile of any surface

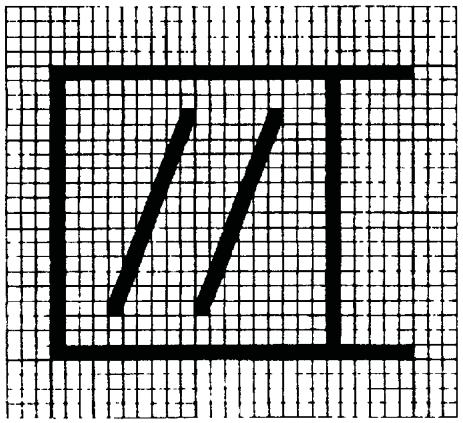


Figure 7 — Parallelism

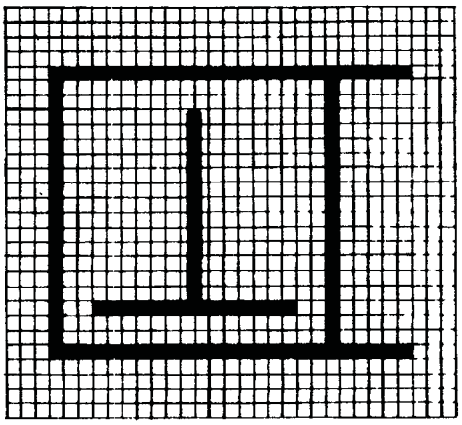


Figure 8 — Perpendicularity

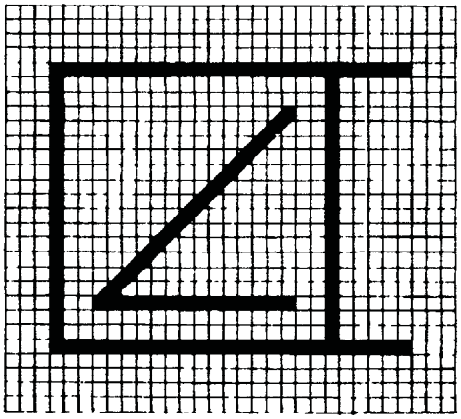


Figure 9 — Angularity

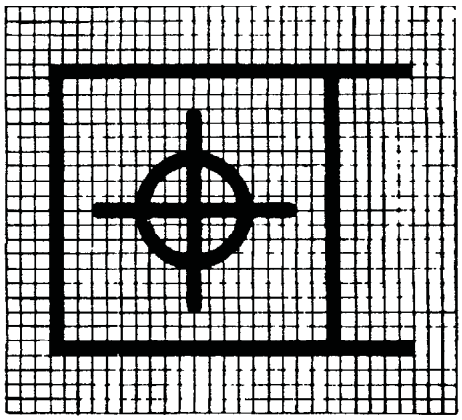


Figure 10 — Position

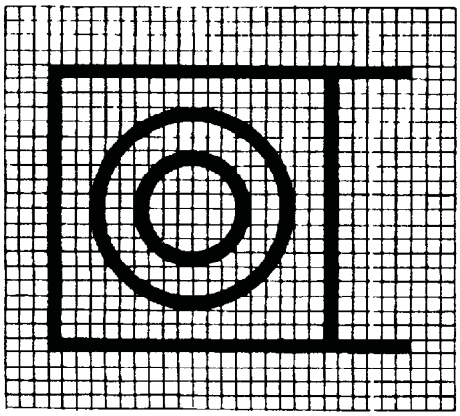


Figure 11 — Concentricity and coaxiality

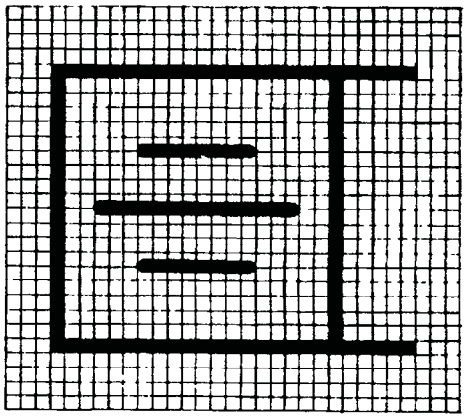


Figure 12 — Symmetry

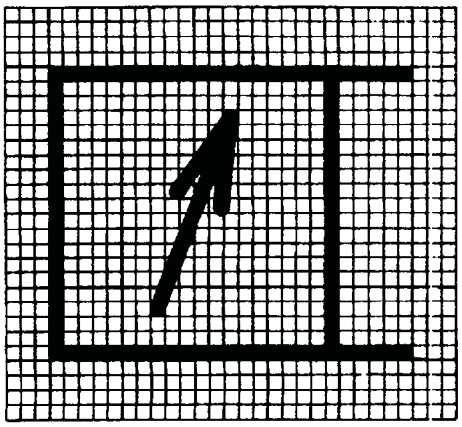


Figure 13 — Simple runout

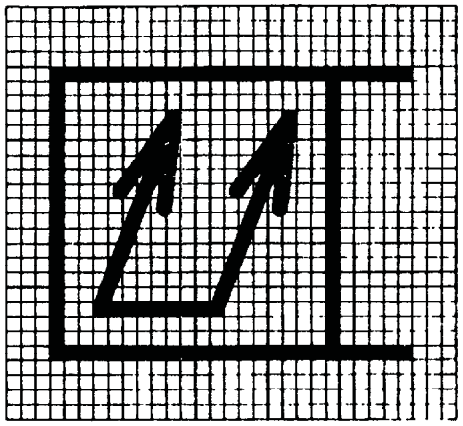


Figure 14 — Total runout

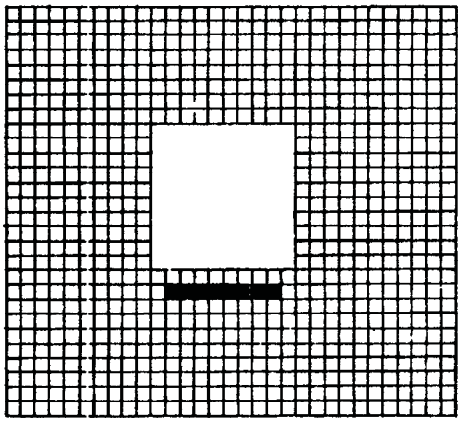


Figure 15 — Indication of toleranced feature (by reference letter)

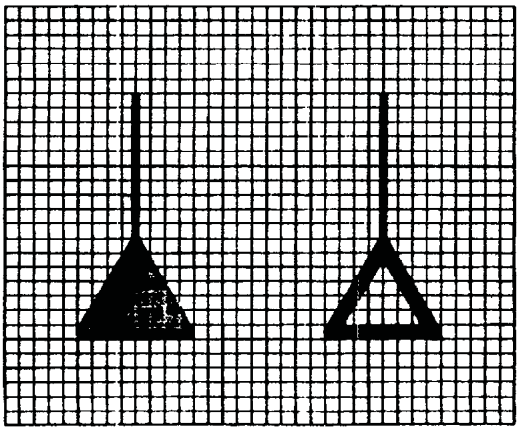


Figure 16 — Indication of datum (direct)

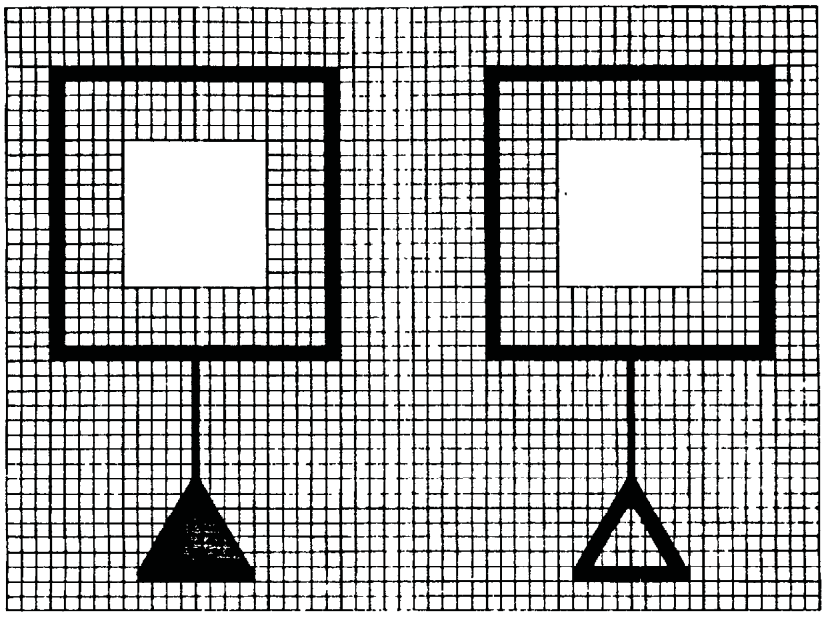


Figure 17 — Indication of datum (by reference letter)

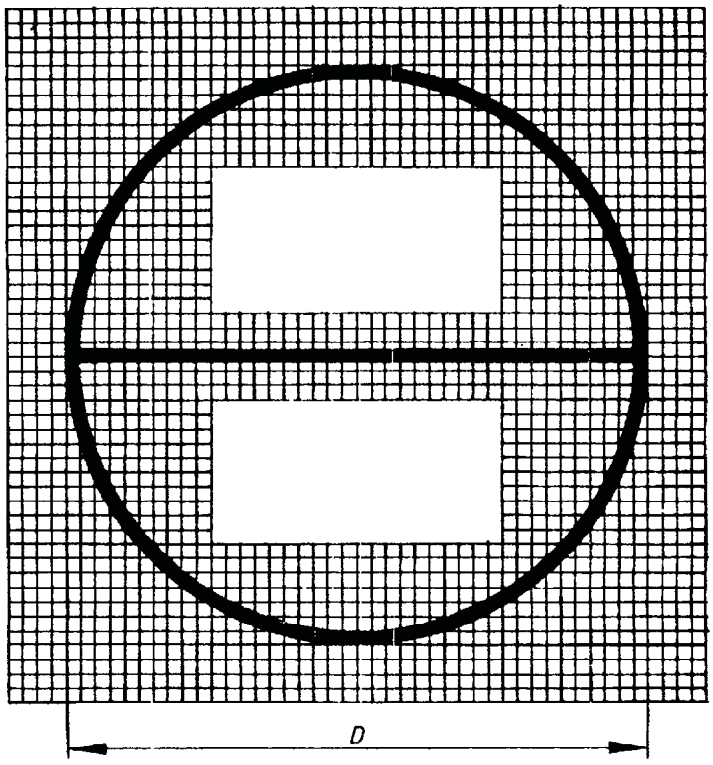
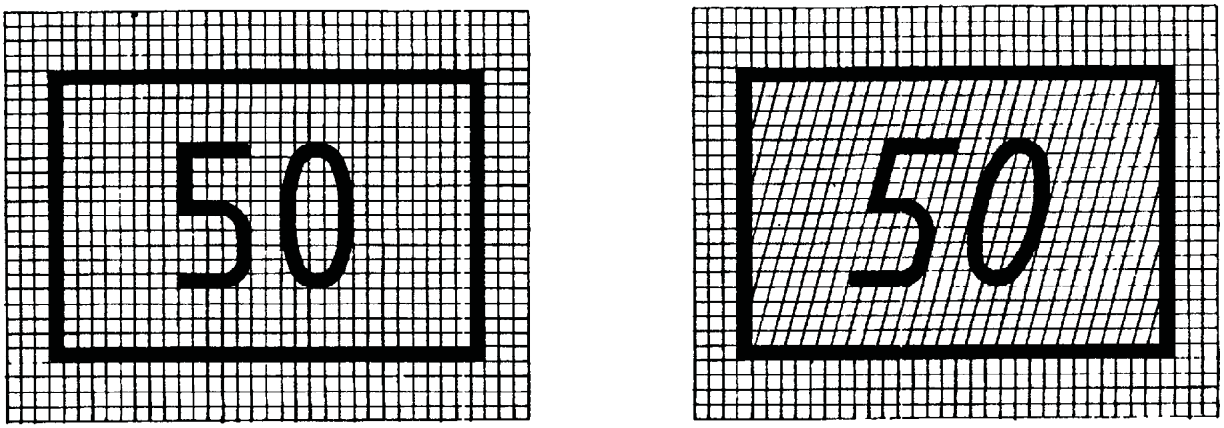
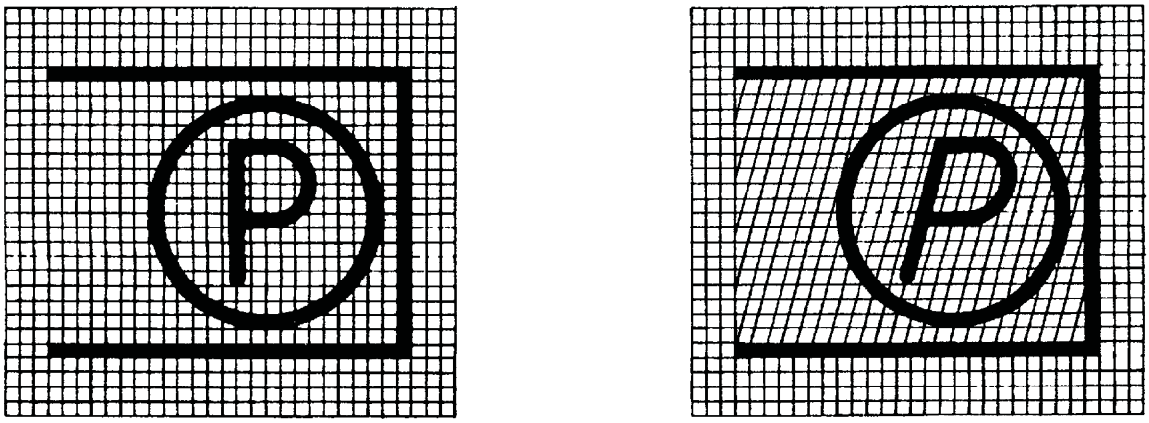


Figure 18 — Datum target (ISO 5459)



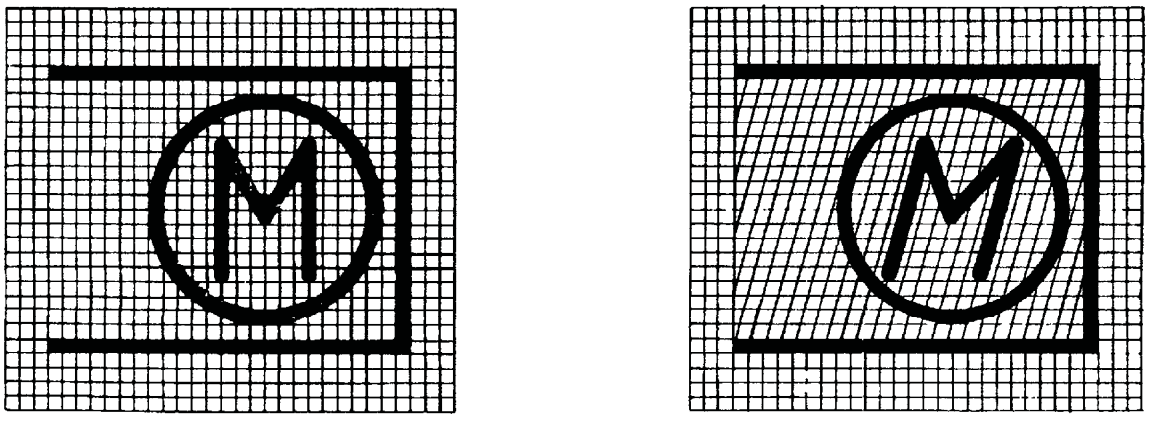
a) b)

Figure 19 — Theoretically exact dimension



a) b)

Figure 20 — Projected tolerance zone



a) b)

Figure 21 — Maximum material condition

5 Dimensions

5.1 Recommended dimensions of the symbols with lettering type A are specified in table 1, those for use with lettering type B in table 2.

Table 1 — Lettering type A

Dimensions in millimetres

Characteristic	Recommended dimensions					
Height of frame (*H*) *	7	10	14	20	28	40
Height of characters (*h*)	3,5	5	7	10	14	20
Diameter (*D*) **	14	20	28	40	56	80
Thickness of line (*d*)	0,25	0,35	0,5	0,7	1	1,4

Table 2 — Lettering type B

Dimensions in millimetres

Characteristic	Recommended dimensions						
Height of frame (*H*) *	5	7	10	14	20	28	40
Height of characters (*h*)	2,5	3,5	5	7	10	14	20
Diameter (*D*) **	10	14	20	28	40	56	80
Thickness of line (*d*)	0,25	0,35	0,5	0,7	1	1,4	2

* Where an additional tolerance value is to be inscribed in a lower compartment (see ISO 1101), this height should be increased, dependent on the heights of the inscriptions.

** See figure 18.

5.2 The recommended widths of the frame should be :

— first compartment, equal to height of frame (*H*);

— second compartment, to suit the length of the inscription;

— third and subsequent compartments, if required, to suit the width of the reference letter (or letters).

The distances between the vertical strokes of the compartments and the inscriptions shall be at least twice the thickness of lines, with a minimum of 0,7 mm.

6 Examples

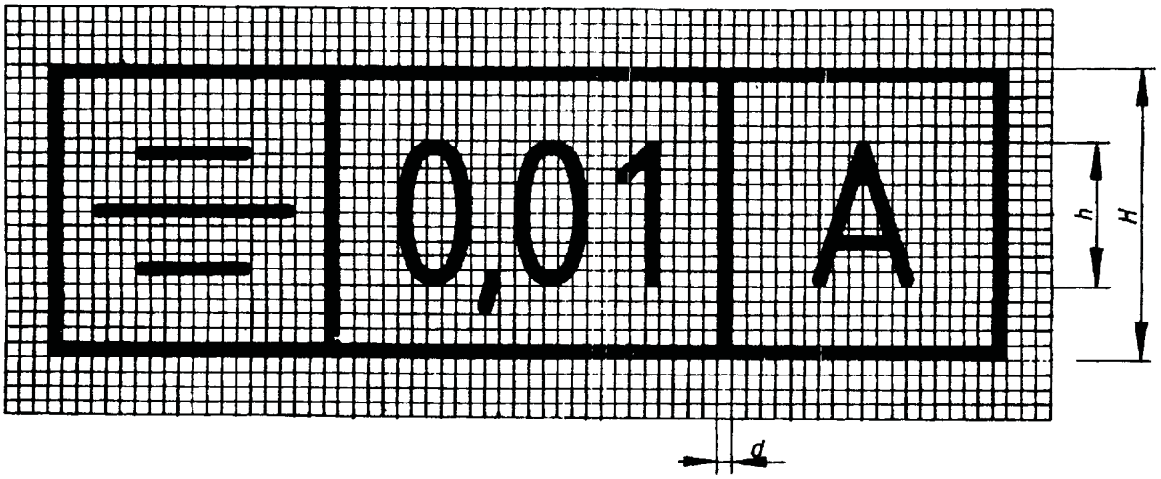


Figure 22a) — Lettering B, vertical

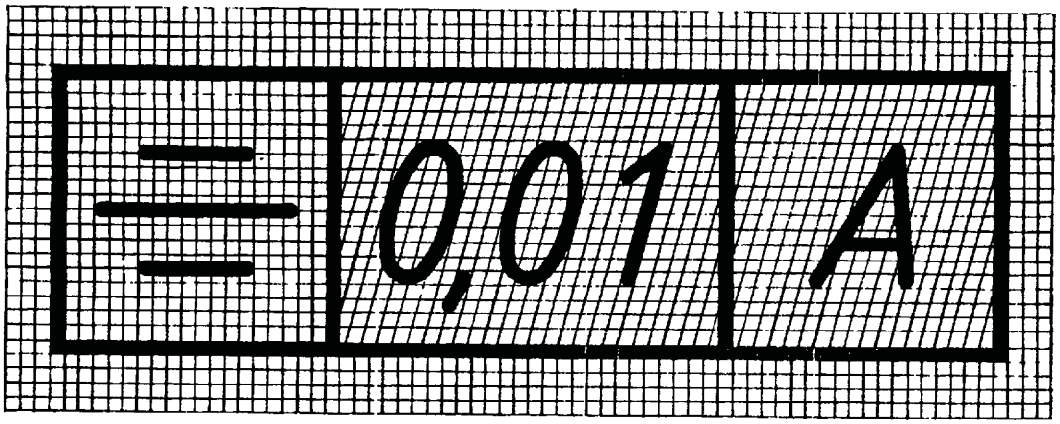


Figure 22b) — Lettering B, inclined

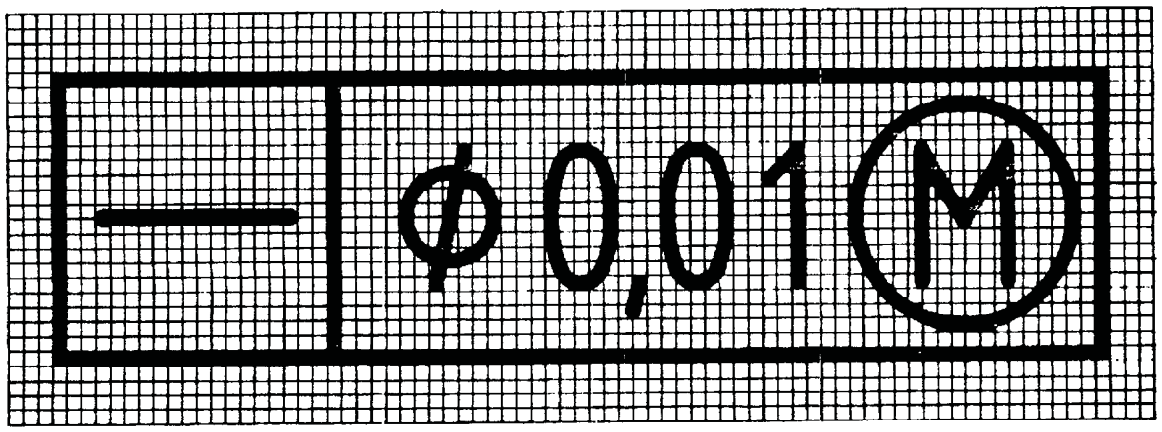


Figure 23a) — Lettering B, vertical

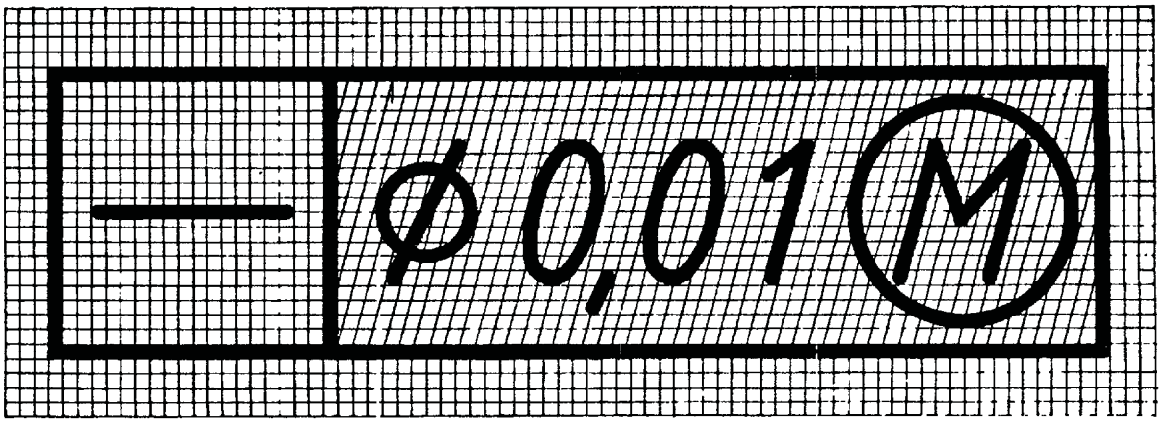


Figure 23b) — Lettering B, inclined

List of references

See national foreword.

BS EN ISO 7083 : 1995
BS 308 Section 3.6 : 1995

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