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Technical product documentation (TPD) — Presentation of dimensions and tolerances —

Part 1: General principles

Documentation technique de produits — Représentation des dimensions et tolérances —

Partie 1: Principes généraux

Reference number
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Contents

Page

Foreword ..... **v**

Introduction ..... **vi**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **2**

4 Presentation of dimensions **3**
4.1 Presentation rules 3
4.1.1 Dimensions 3
4.1.2 Repeated dimensions 3
4.1.3 Out of scale dimensions 3
4.1.4 Auxiliary dimensions 3
4.1.5 Theoretically exact dimensions 3
4.1.6 Symmetrical dimensions 4
4.1.7 Characters and presentation 4
4.2 Positioning of dimensions 4
4.3 Units of dimensions 6

5 Elements of dimensioning — Usage **6**
5.1 General 6
5.2 Property indicators 7
5.3 Dimension line 8
5.4 Terminators and origin presentation 11
5.4.1 Terminators 11
5.4.2 Origin presentation 12
5.5 Extension line 13
5.6 Leader line 17
5.7 Dimensional values 17
5.7.1 Presentation 17
5.7.2 Placement of dimensional values and symbols 17
5.7.3 Special placement of dimensional values and symbols 19
5.8 Alpha numerical characters and symbols representing dimensional values 20
5.8.1 Alpha numerical characters representing dimensional values 20
5.8.2 Symbols added to dimensional values 21
5.9 Tabular dimensioning 21
5.10 Complementary indication 22

6 Presentation of dimensional tolerances **22**
6.1 General 22
6.2 Limit deviations 22
6.3 Limit dimensioning 24

7 Presentation of special dimensions **24**
7.1 Arrangement of graphical and letter symbols with dimensional values 24
7.2 Diameters 26
7.3 Radii 26
7.3.1 General 26
7.3.2 Dimension location of radius centre 27
7.3.3 Semicircle features 28
7.3.4 Combined radii presentation 28
7.4 Spheres 29
7.5 Between 29
7.6 Arcs, chords and angles 30
7.7 Squares 32
7.8 Equally spaced and repeated features 33
7.8.1 Equally spaced features 33

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7.8.2 Repeated features ... 35
7.8.3 Tabulated repeated features ... 36
7.9 Symmetrical workpieces and views ... 37
7.10 Presentation of levels ... 39
7.11 Dimensions of out-of-scale represented features ... 40
7.12 Auxiliary dimensions ... 40
7.13 Theoretical exact dimensions ... 40
7.14 Dimensioning of curved features ... 40
7.14.1 Curved features defined by radii ... 40
7.14.2 Curved features defined by coordinate dimensions ... 41
7.15 Dimensioning of developed views ... 43
7.16 Dimensioning of thin parts ... 43
7.16.1 Thickness indication ... 43
7.16.2 Surface indication ... 44
7.17 Dimensioning of restricted areas ... 45
7.17.1 General Rules ... 45
7.17.2 Dimensioning of restricted areas on surfaces of revolution ... 45
7.17.3 Dimensioning of restricted areas on other than surfaces of revolution ... 46

8 Arrangements of dimensions ... 47
8.1 General ... 47
8.2 Chain dimensioning ... 47
8.3 Parallel dimensioning ... 47
8.4 Running dimensioning ... 48
8.4.1 General ... 48
8.4.2 Unidirectional and bidirectional running dimensions ... 48
8.5 Coordinate dimensioning ... 52
8.5.1 Cartesian coordinate dimensioning ... 52
8.5.2 Polar coordinate dimensioning ... 54
8.6 Combined dimensioning ... 55

9 Notes and special notations ... 56
9.1 Flag notes ... 56
9.2 Indication of textual instructions ... 58

Annex A (normative) **Relations and dimensions of graphical symbols ... 60**

Annex B (informative) **Chamfers, countersinks, wedges, cones and screw threads ... 64**

Annex C (informative) **Former practice ... 67**

Bibliography ... 68

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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 10, *Technical product documentation*.

This second edition cancels and replaces the first edition (ISO 129-1:2004), which has been technically revised.

The main changes compared to the previous edition are as follows:

— that this document does not cover the application of dimensioning tolerances has been clarified;

— property indicator, surface indicator, developed length and between symbols have been discussed;

— flag notes and textual instructions have been discussed;

— dimensioning repeated features and restricted areas have been clarified.

A list of all parts in the ISO 129 series can be found on the ISO website.

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Introduction

This document is intended for all fields of application. See other parts of ISO 129 for information pertaining to specific application areas.

The principles of tolerancing and the interpretation of tolerance presentations are given in the ISO 14405 series.

Figures in this document illustrate the rules and are not intended to show complete representations. It should be understood that third-angle projection could equally well have been used without prejudice to the principles established.

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Technical product documentation (TPD) — Presentation of dimensions and tolerances —

Part 1: General principles

1 Scope

This document establishes the general principles for presentation of dimensions and associated tolerances that apply to 2D technical drawings in all disciplines and trades but which can also be applied to 3D applications.

This document does not cover the application of dimensional tolerances and their meaning. See ISO 14405-1 for tolerancing principles. This document can only be used to describe the nominal model of a drawing, not the non-ideal surface model (skin model) used for tolerancing purposes (for more information on tolerancing specifications, see the list of GPS standards listed as normative reference or as bibliography)

Considering the ISO 14405 series, the presentation of tolerance indication is unambiguous when it is applied to a dimension which is a size and ambiguous when the dimension is not a size.

All rules presented in this document are available for any type of drawing (see ISO 29845).

In addition, this document introduces the concept of property indicators, developed length, between, surface indicators, flag notes and textual instructions.

NOTE 1 All figures are shown in 2D views only.

NOTE 2 Additional information and details for construction engineering are given in ISO 6284.

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 128-20, *Technical drawings — General principles of presentation — Part 20: Basic conventions for lines*

ISO 128-22, *Technical drawings — General principles of presentation — Part 22: Basic conventions and applications for leader lines and reference lines*

ISO 128-24:2014, *Technical drawings — General principles of presentation — Part 24: Lines on mechanical engineering drawings*

ISO 3098 (all parts), *Technical product documentation — Lettering*

ISO 10209, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

ISO 14405 (all parts), *Geometrical product specifications (GPS) — Dimensional tolerancing*

ISO 81714-1, *Design of graphical symbols for use in the technical documentation of products — Part 1: Basic rules*

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3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209 and the following apply.

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

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

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

3.1 Elements of dimensioning

3.1.1
centre line
line or set of two perpendicular lines used to represent a median feature, e.g. an axis or a centre plane

3.1.2
dimension line
straight or curved line with terminators at each end or origin and terminator at each end, indicating the size of a feature or the extent of a feature or between two features, or between a feature and an *extension line* (3.1.3), or between two extension lines

3.1.3
extension line
line which is an extension of a feature outline or of a *centre line* (3.1.1)

3.1.4
origin symbol
circle indicating the start of running dimensioning or coordinate dimensioning

3.2 Dimensions

3.2.1
angular dimension
angle of an angular feature of size or angle between two features

Note 1 to entry: In mechanical engineering drawings, angular dimensions are classified as angular sizes or angular distances; see ISO 14405-2.

3.2.2
dimensional value
nominal numerical value expressed in a specific unit relevant to a *linear* or *angular dimension* (3.2.4, 3.2.1)

Note 1 to entry: The tolerance limits and/or permissible deviations are applied to the dimensional value.

3.2.3
developed length
initial length of material prior to forming, e.g. by bending

3.2.4
linear dimension
linear size of a feature of size or a linear distance between two features

Note 1 to entry: In mechanical engineering drawings, linear dimensions are classified as linear sizes or linear distances; see ISO 14405-2.

3.2.5
property indicator
symbol used to define the shape of a feature or property of an entity composed by several features

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