

DIN EN ISO 129-1:2020-02 (E)

Technical product documentation (TPD) - Presentation of dimensions and tolerances - Part 1: General principles (ISO 129-1:2018)

Contents	Page
European foreword.....	4
Foreword.....	5
Introduction.....	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 Presentation of dimensions	9
4.1 Presentation rules.....	9
4.1.1 Dimensions.....	9
4.1.2 Repeated dimensions.....	9
4.1.3 Out of scale dimensions.....	9
4.1.4 Auxiliary dimensions.....	9
4.1.5 Theoretically exact dimensions.....	9
4.1.6 Symmetrical dimensions.....	10
4.1.7 Characters and presentation.....	10
4.2 Positioning of dimensions.....	10
4.3 Units of dimensions.....	12
5 Elements of dimensioning — Usage	12
5.1 General.....	12
5.2 Property indicators.....	13
5.3 Dimension line.....	14
5.4 Terminators and origin presentation.....	17
5.4.1 Terminators.....	17
5.4.2 Origin presentation.....	18
5.5 Extension line.....	19
5.6 Leader line.....	23
5.7 Dimensional values.....	23
5.7.1 Presentation.....	23
5.7.2 Placement of dimensional values and symbols.....	23
5.7.3 Special placement of dimensional values and symbols.....	25
5.8 Alpha numerical characters and symbols representing dimensional values.....	26
5.8.1 Alpha numerical characters representing dimensional values.....	26
5.8.2 Symbols added to dimensional values.....	27
5.9 Tabular dimensioning.....	27
5.10 Complementary indication.....	28
6 Presentation of dimensional tolerances	28
6.1 General.....	28
6.2 Limit deviations.....	28
6.3 Limit dimensioning.....	30
7 Presentation of special dimensions	30
7.1 Arrangement of graphical and letter symbols with dimensional values.....	30
7.2 Diameters.....	32
7.3 Radii.....	32

7.3.1	General.....	32
7.3.2	Dimension location of radius centre.....	33
7.3.3	Semicircle features.....	34
7.3.4	Combined radii presentation.....	34
7.4	Spheres.....	35
7.5	Between.....	35
7.6	Arcs, chords and angles.....	36
7.7	Squares.....	38
7.8	Equally spaced and repeated features.....	39
7.8.1	Equally spaced features.....	39
7.8.2	Repeated features.....	41
7.8.3	Tabulated repeated features.....	42
7.9	Symmetrical workpieces and views.....	43
7.10	Presentation of levels.....	45
7.11	Dimensions of out-of-scale represented features.....	46
7.12	Auxiliary dimensions.....	46
7.13	Theoretical exact dimensions.....	46
7.14	Dimensioning of curved features.....	46
7.14.1	Curved features defined by radii.....	46
7.14.2	Curved features defined by coordinate dimensions.....	47
7.15	Dimensioning of developed views.....	49
7.16	Dimensioning of thin parts.....	49
7.16.1	Thickness indication.....	49
7.16.2	Surface indication.....	50
7.17	Dimensioning of restricted areas.....	51
7.17.1	General Rules.....	51
7.17.2	Dimensioning of restricted areas on surfaces of revolution.....	51
7.17.3	Dimensioning of restricted areas on other than surfaces of revolution.....	52
8	Arrangements of dimensions.....	53
8.1	General.....	53
8.2	Chain dimensioning.....	53
8.3	Parallel dimensioning.....	53
8.4	Running dimensioning.....	54
8.4.1	General.....	54
8.4.2	Unidirectional and bidirectional running dimensions.....	54
8.5	Coordinate dimensioning.....	58
8.5.1	Cartesian coordinate dimensioning.....	58
8.5.2	Polar coordinate dimensioning.....	60
8.6	Combined dimensioning.....	61
9	Notes and special notations.....	62
9.1	Flag notes.....	62
9.2	Indication of textual instructions.....	64
	Annex A (normative) Relations and dimensions of graphical symbols.....	66
	Annex B (informative) Chamfers, countersinks, wedges, cones and screw threads.....	70
	Annex C (informative) Former practice.....	73
	Bibliography.....	74