INTERNATIONAL STANDARD

ISO 129-5

First edition
2018-04

Technical product documentation — Indication of dimensions and tolerances —

Part 5: Dimensioning of structural metal work

Technique du produit documentation — Indication des cotes et tolérances —

Partie 5: Cotes des ouvrages de structure métallique

Reference number
ISO 129-5:2018(E)

COPYRIGHT PROTECTED DOCUMENT

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **iv**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Basic requirements **2**

5 Simplified dimensioning of structural metal work **2**

6 Dimensioning of component profile **2**
6.1 Profile code 2
6.2 Dimensioning samples 3
6.3 Profile dimensioning in drawing 7

7 Detail requirement **9**
7.1 Typical component dimensioning 9
7.2 Dimensioning of bolts and rivets 12
7.3 Dimensioning of welding components 12

Annex A (normative) **Profile graphical symbols** **14**

Annex B (informative) **Dimensioning of weld components** **16**

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,* Subcommittee SC 6, *Mechanical engineering documentation*.

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

Technical product documentation — Indication of dimensions and tolerances —

Part 5: Dimensioning of structural metal work

1 Scope

This document specifies the dimensioning of drawings for general use on structural metal work mainly consisting of plates, bars and profile sections.

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 129-1, *Technical drawings — Indication of dimensions and tolerances Part 1: General principles*

ISO 129-4, *Technical product documentation (TPD) — Indication of dimensions and tolerances — Part 4: Dimensioning of shipbuilding drawings*

ISO 5261:1995, *Technical drawings — Simplified representation of bars and profile sections*

ISO 657-1, *Hot-rolled steel sections — Part 1: Equal-leg angles — Dimensions*

ISO 657-2, *Hot-rolled steel sections — Part 2: Unequal-leg angles — Dimensions*

ISO 657-16, *Hot-rolled steel sections — Part 16: Sloping flange column sections (metric series) — Dimensions and sectional properties*

ISO 657-18, *Hot-rolled steel sections — Part 18: L sections for shipbuilding (metric series) — Dimensions, sectional properties and tolerances*

ISO 657-21, *Hot-rolled steel sections — Part 21: T-sections with equal depth and flange width — Dimensions*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209, ISO 129-1 and the following apply.

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

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

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

3.1
centroidal line
line passing through the centre of mass

4 Basic requirements

Basic requirements of dimensioning are as follows:

a) The indication of dimensions and tolerances shall follow the general principles specified in ISO 129-1.

b) The dimensions of structural metal work shall be simple and clear. The standard plates and profile sections should be represented with code.

c) The datum line of dimensioning should be the centroidal line of component.

To maintain readability of drawings and to simplify drawing, dimension lines can be omitted as shown in Figure 1.

5 Simplified dimensioning of structural metal work

Schematic dimensioning of structural metal work shall conform to the representation method specified by ISO 5261.

The arc length of a circular structure in the frame should be dimensioned on one side of its line. An example is shown in Figure 1.

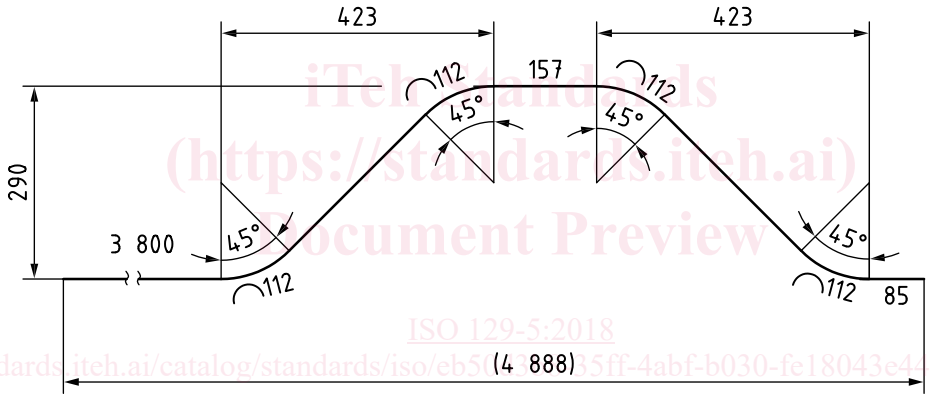


Figure 1 — Dimensioning of arc sketch

6 Dimensioning of component profile

6.1 Profile code

The representation of profile sections shall use the form of Figure 2. A type code of “C” is required to indicate cold formed sections and that the type code can be omitted for all other types of section. "Graphical symbol or letter code" represents the shape of profile sections, see Table 1 to Table 3. The proportion and dimensions of the graphical symbols shall be as specified in Annex A. "Standard number" is the code of technical standard which specifies the technical requirements of the section. "Necessary size" is the main size of the section. The parameters of size should be separated with the times sign, "×", see Table 1 to 3.

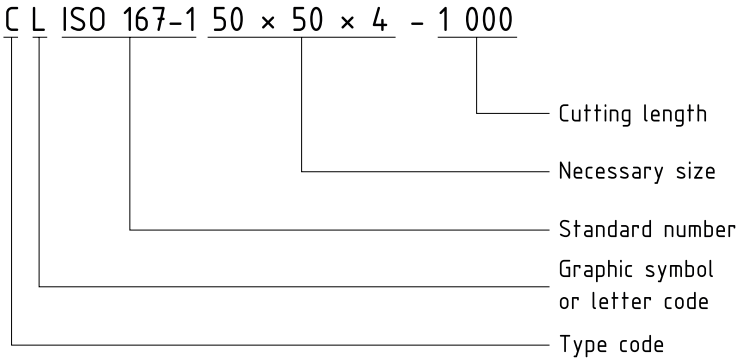


Figure 2 — Profile code

6.2 Dimensioning samples

Equal leg angle iron, size 50 mm × 50 mm × 4 mm, length 1 000 mm:

⌞ ISO 167-1 50 × 50 × 4 – 1 000

The standard code can be omitted when no such standard exists or the omission does not lead to a misunderstanding:

⌞ 50 × 50 × 4 – 1 000

For simplification, a capital 'L' can be used instead of the graphical symbol:

L 50 × 50 × 4 – 1 000

Table 1 — Hot rolled sections

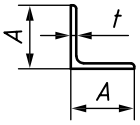
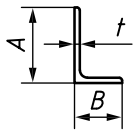
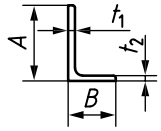
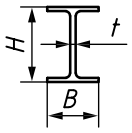
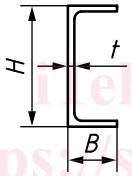
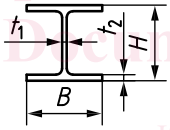
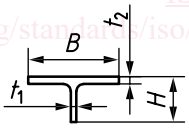
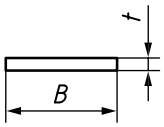
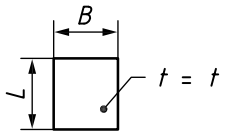
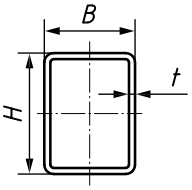
No.	Classification	Shape of section	Graphical symbol	Letter code	Representation
1	Equal leg angle		Shall conform to the designation specified by ISO 5261:1995, Table 2		Shall conform to the designation specified by ISO 657-1
2	Unequal leg angle				Shall conform to the designation specified by ISO 657-2
3	L section				Shall conform to the designation specified by ISO 657-18
4	I-beam section				⌶ H × B × t – L or I H × B × t – L
5	Channel section				C ⌊ H × B × t – L
6	H-beam section				Shall conform to the designation specified by ISO 657-16
7	T section				Shall conform to the designation specified by ISO 657-21
8	Flat bar		—		Shall conform to the designation specified by ISO 129-4
9	Plate		—		—B × t L
10	Rectangular hollow section		▭		▭ H × B × t – L

Table 2 — Cold drawn sections

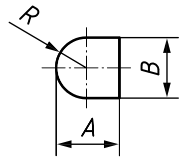
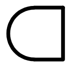
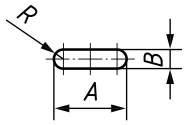
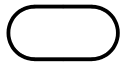
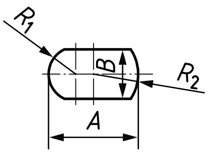
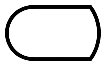
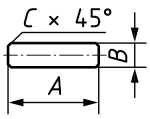
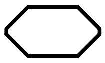
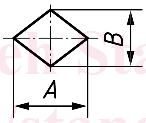
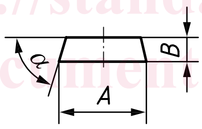
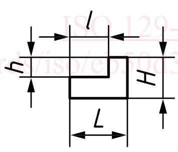
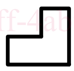
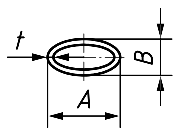
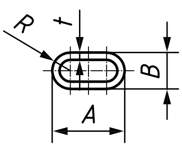
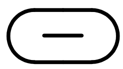
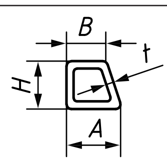
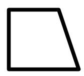
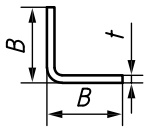
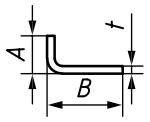
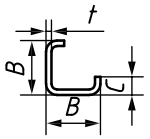
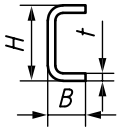
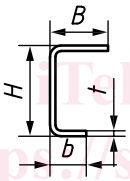
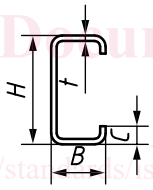
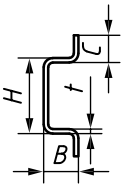
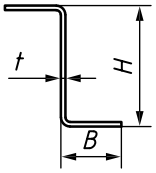
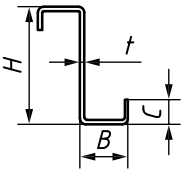
No.	Classification	Shape of section	Graphical symbol	Letter code	Representation
1	Single round-headed flats				A × B × R – L
2	Double round-headed flats				A × B × R – L
3	Unequal round-headed flats				A × B × R1 × R2 – L
4	Chamfered flats				A × B × C – L
5	Diamond section				A × B – L
6	Trapezoidal section				A × B × α – L
7	Angle–square section				H × L × h × l – L
8	Oval tube				A × B × t – L
9	Slot with round end tube				A × B × R × t – L
10	Right-angled trapezoid tube				A × B × H × t – L

Table 3 — Cold formed sections

No.	Classification	Shape of section	Graphical symbol	Letter code	Representation
1	Thin-walled equal leg angle		Shall conform to the designation specified by ISO 5261:1995, Table 2		C L B × t – L
2	Thin-walled unequal leg angle				C L B × A × t – L
3	Thin-walled equal leg angle with inner edge				C L B × t – L
4	Thin-walled channel section				C [H × B × t – L
5	Scalene channel section				C [H × B × b × t – L
6	Channel section with inner edge				C [H × B × C × t – L
7	Hat section				C ⊓ H × B × C × t – L
8	Z-section			Z	C ⌝ H × B × t – L or C Z H × B × t – L
9	Thin-walled lip Z section				C ⌝ H × B × C × t – L