
Varjenje in sorodni postopki - Prikazovanje s simboli na risbah - Varjeni spoji
(ISO/DIS 2553:2026)

Welding and allied processes - Symbols for welding - Welded joints (ISO/DIS 2553:2026)

Schweißen und verwandte Prozesse - Symbolische Darstellung in Zeichnungen -
Schweißverbindungen (ISO/DIS 2553:2026)

Soudage et techniques connexes - Symboles pour le soudage - Assemblages soudés
(ISO/DIS 2553:2026)

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ISO/DIS 2553

Welding and allied processes — Symbols for welding — Welded joints

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ISO/TC 44/SC 7

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Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Welding symbol	5
4.1 General	5
4.2 Basic welding symbol	5
4.3 Welding symbol systems	6
4.4 Elementary symbols	6
4.4.1 General	6
4.4.2 Combinations of elementary symbols	9
4.4.3 Double-sided butt welds	9
4.5 Supplementary symbols	10
4.5.1 General	10
4.5.2 Weld-all-around symbol	15
4.5.3 Welds of the same type made from point to point	15
4.5.4 Field welds	16
4.5.5 Root reinforcement — Butt welds made from one side	16
4.5.6 Welds on flanged butt and flanged corner joints	16
4.5.7 Multiple welds of the same type	16
4.6 Arrow line	19
4.6.1 General	19
4.6.2 Multiple arrow lines	19
4.6.3 Broken arrow line	19
4.7 Reference line and weld location	20
4.7.1 Reference line - General	20
4.7.2 Weld location	20
4.7.3 Multiple reference lines	21
4.8 Tail	22
5 Dimensioning of welds	23
5.1 General	23
5.2 Cross-sectional dimensions	23
5.3 Length dimensions	23
5.3.1 General	23
5.3.2 Intermittent welds	23
5.4 Butt welds	24
5.4.1 Fusion penetration	24
5.4.2 Double-sided welds	24
5.4.3 Flanged butt welds	24
5.4.4 Flare bevel and flare-V butt welds	24
5.5 Fillet welds	24
5.5.1 Weld size	24
5.5.2 Deep penetration fillet welds	25
5.6 Plug welds in circular holes	25
5.7 Plug welds in elongated holes (slots)	25
5.8 Spot welds	25
5.9 Seam welds	25
5.10 Edge welds	25
5.11 Stud welds	26
5.12 Overlay welds	26
5.13 Stake welds	26
6 Dimensioning of joint preparations	38

ISO/DIS 2553:2026(en)

6.1	General.....	38
6.2	Root gap.....	38
6.3	Included angle	38
6.4	Root radius and depth of root faces — U and J butt joints.....	39
6.5	Depth of joint preparation.....	39
6.6	Countersink angle for plug welds	40
7	Alternative butt weld symbol with required weld quality	40
7.1	General.....	40
7.2	Example	41
	Annex A (informative) Examples of the use of welding symbols.....	42
	Annex B (informative) Tolerances and transition points for weld types	53
	Annex C (informative) Alternative methods for designating intermittent butt and fillet welds.....	54
	Annex D (normative) Symbols for non-destructive testing (NDT).....	57
	Bibliography.....	63

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ISO/DIS 2553:2026(en)

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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 7, *Representation and terms*.

Any feedback, question or request for official interpretation related to any aspect of this document should be directed to the Secretariat of ISO/TC 44/SC 7 via your national standards body. A complete listing of these bodies can be found at www.iso.org/members.html. Official interpretations, where they exist, are available from this page: <https://committee.iso.org/sites/tc44/home/interpretation.html>.

This sixth edition cancels and replaces the fifth edition (ISO 2553:2019), which has been technically revised. The main changes compared to the previous edition are as follows:

- The changes from the 2019 edition will be added after the DIS ballot.

ISO/DIS 2553:2026(en)

Introduction

The symbols given in this document can be used in technical product documentation (TPD) for welded components. For the purposes of this document, TPD can be on paper or generated using electronic means e.g. CAD systems.

Design-related specifications, such as type, thickness, and length of weld, weld quality, surface treatment, filler material and testing specifications, can be indicated directly at the weld by means of the symbols. The principals of this document can be applied to brazed and soldered joints.

Clarity can be improved by references to collective information in the TPD or references to additional design-related documents.

Preparation for production can require detailed welding-related planning. The type of representation described in this document can be used for this purpose and complemented by additional production-related information (e.g. welding position, welding process, WPS, joint preparation, preheating). This information is often given in production-related documents, such as work schedules or welding procedure specifications (WPS).

TPDs are intended to clearly and understandably illustrate design-related specifications. Welding-related TPDs are prepared and checked by specially trained personnel (see ISO 14731).

This document recognizes that there are two different approaches in the global market to designate the arrow side and other side on TPDs, and allows for either to be used in isolation, to suit a particular market need. Application of either approach identifies a welding symbol in accordance with this document. The approach in accordance with system A is based on ISO 2553:1992¹. The approach in accordance with system B is based upon standards used by Pacific Rim countries.

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Welding and allied processes — Symbols for welding — Welded joints

1 Scope

This document defines the rules to be applied for symbolic representation of welded joints. This can include information about the geometry, manufacture, quality and testing of the welds.

The symbols are intended to enable standardized representation of the welds to be made;

For the purposes of this document, drawings can be on paper or generated using electronic means e.g. CAD systems.

It is recognized that there are two different approaches in the global market to designate the arrow side and other side. In this document:

- clauses, tables and figures which carry the suffix "system A" are applicable only to the symbolic representation system based on a dual reference line;
- clauses, tables and figures which carry the suffix "system B" are applicable only to the symbolic representation system based on a single reference line;
- clauses, tables and figures which do not have the suffix "system A" or "system B" are applicable to both systems.

The symbols shown in this document can be combined with other symbols, for example to show surface finish requirements.

An alternative designation method is presented which can be used to represent welded joints by specifying essential design information such as weld dimensions, quality level, etc. The joint preparation and welding process(es) are then determined by the production unit in order to meet the specified requirements.

The principles of this document can also be applied to soldered and brazed joints.

NOTE Examples given in this document, including dimensions, are illustrative only and are intended to demonstrate the proper application of principles.

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 128-2, *Technical product documentation (TPD) — General principles of representation — Part 2: Basic conventions for lines*

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

ISO 3098-2, *Technical product documentation — Lettering — Part 2: Latin alphabet, numerals and marks*

ISO 4063, *Welding, brazing, soldering and cutting — Nomenclature of processes and reference numbers*

ISO 17659:2002, *Welding — Multilingual terms for welded joints with illustrations*

ISO/TR 25901-1, *Welding and allied processes — Vocabulary — Part 1: General terms*

ISO/DIS 2553:2026(en)

ISO/TR 25901-3, *Welding and allied processes — Vocabulary — Part 3: Welding processes*

ISO/TR 25901-4, *Welding and allied processes — Vocabulary — Part 4: Arc welding*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17659, ISO/TR 25901-1, ISO/TR 25901-3, ISO/TR 25901-4, 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 <https://www.electropedia.org/>

3.1

welding symbol

symbol consisting of an *arrow line* (3.3) and a *reference line* (3.4) and which can also include *elementary symbols* (3.8) and *supplementary symbols* (3.9), dimensions and/or *tail* (3.5)

Note 1 to entry: See [Clause 4](#).

3.2

basic welding symbol

symbol consisting of an *arrow line* (3.3), *reference line* (3.4) and *tail* (3.5) used when the joint is not specified and only to indicate that a welded joint is to be made

Note 1 to entry: See [4.2](#).

3.3

arrow line

leader line used to indicate that the joint is to be welded generally drawn at 135° to the *reference line* (3.4)

Note 1 to entry: See [4.6](#).

3.4

reference line

part of the *welding symbol* (3.1) on which the *elementary symbol* (3.8) is located, generally drawn parallel to the bottom edge of the drawing

Note 1 to entry: See [4.7](#).

3.5

tail

V-shaped element added to the end of the continuous *reference line* (3.4) away from the *arrow line* (3.3)

Note 1 to entry: See [4.8](#).

3.6

arrow side

side of the joint to which the *arrow line* (3.3) is pointing

Note 1 to entry: See [4.7.2.1](#).

3.7

other side

opposite side of the joint to the *arrow side* (3.6)

Note 1 to entry: See [4.7.2.1](#).

ISO/DIS 2553:2026(en)

3.8 elementary symbol

symbol forming part of the *welding symbol* (3.1) attached to the *reference line* (3.4) to indicate the type of weld and joint preparation

Note 1 to entry: See 4.4.

3.9 supplementary symbol

symbol used in conjunction with *elementary symbols* (3.8) to convey additional information about the joint

Note 1 to entry: See 4.5.

3.10 complementary information

non-symbolic information, relevant to the welds being made, which may be included in the *tail* (3.5) of the *welding symbol* (3.1)

Note 1 to entry: See 4.8.

3.11 intermittent weld

series of weld elements made at intervals along a joint

[SOURCE: ISO/TR 25901-1:2016, 2.1.6.15]

Note 1 to entry: See 5.3.2.

3.11.1 chain intermittent weld

intermittent weld (3.11) on each side of a joint arranged so that the weld elements lie opposite one another along the joint

Note 1 to entry: These are usually fillet welds in T-joints and lap joints.

Note 2 to entry: See 5.3.2.2.

[SOURCE: ISO/TR 25901-1:2016, 2.1.6.17, modified — Note 2 to entry has been adapted.]

3.11.2 staggered intermittent weld

intermittent weld (3.11) on each side of a joint arranged so that the weld elements on one side lie opposite the spaces on the *other side* (3.7) along the joint

Note 1 to entry: These are usually fillet welds in T-joints and lap joints.

Note 2 to entry: See 5.3.2.3.

[SOURCE: ISO/TR 25901-1:2016, 2.1.6.16, modified — Note 2 to entry has been adapted.]

3.12 offset

distance between the start of welding on one side of a *staggered intermittent weld* (3.11.2) and the start of welding on the *other side* (3.7)

Note 1 to entry: See 5.3.2.3, C.2.3, Table C.1, No. 3, C.3.3 and Table C.2, No. 3.

3.13 back run

DEPRECATED: sealing run

final run deposited on the root side of a fusion weld

[SOURCE: ISO/TR 25901-1:2016, 2.1.8.21]

ISO/DIS 2553:2026(en)

3.14**backing weld**

backing in the form of a weld

3.15**nominal weld length**

design length of a weld

Note 1 to entry: Nominal weld length is the length where the weld has its full size.

3.15.1**nominal length of weld element**

<intermittent welds> nominal length of each element of the weld

Note 1 to entry: Nominal weld length is the length where the weld has its full size.

3.16**nominal throat thickness**

a

design value of the height of the largest isosceles triangle that can be inscribed in the section of a fillet weld

Note 1 to entry: If other dimensions are specified, e.g. fillet welds with unequal leg lengths (see [Table 6](#), No. 2.2), they need to be clearly specified.

[SOURCE: ISO/TR 25901-1:2016, 2.1.7.8, modified — The symbol a has been added. Note 1 to entry has been changed.]

3.17**leg length**

z

distance from the actual or projected intersection of the fusion faces and the toe of a fillet weld, measured across the fusion face

[SOURCE: ISO/TR 25901-1:2016, 2.1.7.5, modified — The symbol z has been added.]

3.18**fusion penetration****joint penetration**

s

DEPRECATED: weld metal thickness

depth of the weld metal at the joint interface, excluding the reinforcement or for overlay welding, the thickness of the weld metal (see [Table 6](#), No. 9.1)

3.19**deep penetration throat thickness**

a_d

nominal throat thickness ([3.16](#)) to which a certain amount of fusion penetration is added

Note 1 to entry: previous editions of ISO 2553 used s instead of a_d

[SOURCE: ISO/TR 25901-1:2016, 2.1.7.9, modified — The symbol a_d has been added. Note 1 to entry has been deleted.]

3.20**flare-bevel weld**

butt weld between a joint member with a curved surface and another with a planar surface

Note 1 to entry: See [Table 6](#), No. 1.7.

[SOURCE: ISO/TR 25901-1:2016, 2.1.6.18]

ISO/DIS 2553:2026(en)

3.21

flare-V weld

butt weld between two members with curved surfaces

Note 1 to entry: See [Table 6](#), No. 1.6.

[SOURCE: ISO/TR 25901-1:2016, 2.1.6.19]

3.22

field weld

weld made outside workshops usually at the place of final installation

[SOURCE: ISO/TR 25901-1:2016, 2.1.8.40]

3.23

stake weld

narrow profile seam or spot weld, made in a lap joint or T-joint

Note 1 to entry: Stake welds have either deeper or narrower profiles or both (see [Table 1](#), No 23 and 24) compared to fusion seam or fusion spot welds and are typically used for electron beam welding or laser beam welding.

4 Welding symbol

4.1 General

A reference line and arrow line are required elements. Additional elements may be included to convey specific information.

It is preferable to show the welding symbol on the same side of the joint that the weld is to be made, i.e. the arrow side (see [4.7](#)).

The thickness of the arrow lines, reference line, elementary symbols and lettering shall be in accordance with ISO 128-2 and ISO 3098-2.

In order not to overburden drawings, reference should either be made to notes on the drawing or to other documents.

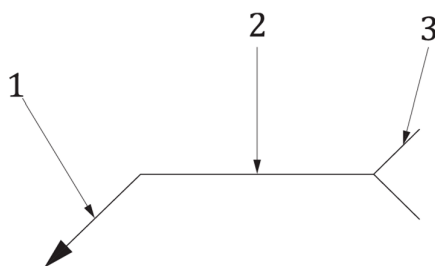
If the required weld cannot be designated using the symbols in this document, reference shall be made to other documents and/or figures.

4.2 Basic welding symbol

If joint details are not specified and the only requirement is to indicate that a joint is to be welded, the basic symbol shown in [Figure 1](#) may be used. In this case, a dual reference line is not required for system A (see [4.7.1](#) A) as no details concerning the weld are being conveyed.

The basic welding symbol shall comprise an arrow line, reference line and a tail.

ISO/DIS 2553:2026(en)

**Key**

- 1 arrow line
 2 reference line
 3 tail

NOTE This symbol is often used to indicate the location of tack welds.

Figure 1 — Basic welding symbol (joint details and type not specified)

4.3 Welding symbol systems

This document recognizes two different systems, A and B, to designate the arrow side and other side.

The symbolic representation in system A is based on a dual reference line consisting of a continuous line and a dashed line (see [4.7](#)).

The symbolic representation in system B is based on a single reference line (see [4.7](#)).

Clauses, Tables and Figures which carry the suffix "system A" or "system B" are applicable only to system A or system B respectively.

Clauses, tables and figures which do not have a suffix are applicable to both systems.

System A and system B shall not be mixed. The system used shall be clearly indicated including units of measurement in accordance with ISO 129-1.

Examples of comprehensive welding symbols showing the location of elements are given in [Figure A.1](#).

4.4 Elementary symbols

4.4.1 General

Elementary symbols, in accordance with [Table 1](#), may be added to the reference line in both systems A and B to indicate the type of weld to be made.

Elementary symbols form part of the welding symbol and shall be drawn attached to the reference line generally at the mid-point.

Elementary symbols may be complemented by:

- supplementary symbols (see [4.5](#) and [Table 3](#));
- dimensions (see [Clause 5](#));
- complementary information.

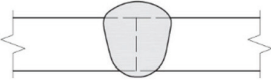
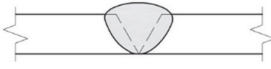
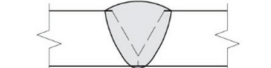
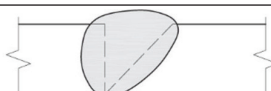
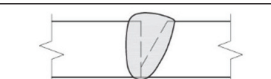
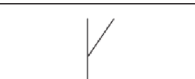
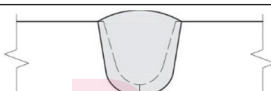
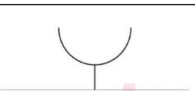
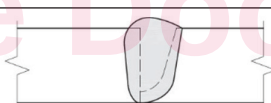
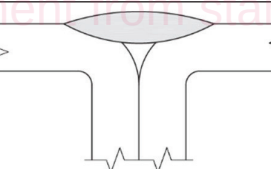
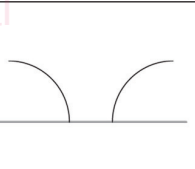
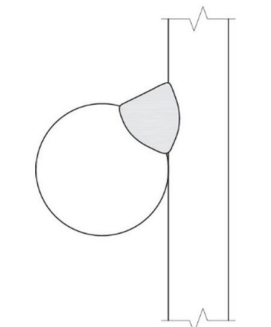
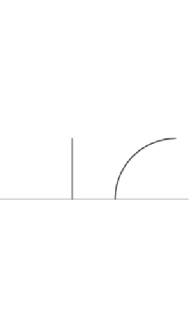
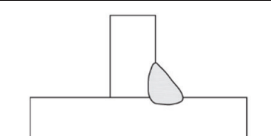
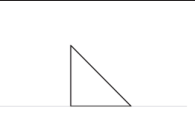
The orientation of the elementary symbols shall not be changed to that shown in [Tables 1](#) to [3](#).

[Annex B](#) gives guidance on tolerances and transition points for butt welds, edge welds and fillet welds.

ISO/DIS 2553:2026(en)

If clear illustration by means of symbols is not possible, cross-sections of the welds may be shown and dimensioned.

Table 1 — Elementary symbols

No.	Designation (weld type)	Illustration of weld type (dashed lines show joint preparation prior to welding)	Symbol ^a
1	Square butt ^b		
2	Single-V butt ^b		
3	Single-V butt with broad root face ^b		
4	Single-bevel butt ^b		
5	Single-bevel butt with broad root face ^b		
6	Single-U butt ^b		
7	Single-J butt ^b		
8	Flare V		
9	Flare bevel		
10	Fillet		
11	Plug	