
Welding terms and symbols

Part 2. Specification for symbols for welding

Termes et symboles relatifs au soudage

Partie 2. Spécification des symboles relatifs au soudage

Begriffe und Symbole der Schweißtechnik

Teil 2. Spezifikation für Symbole der Schweißtechnik

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Foreword

The revision of this Part of BS 499 has been carried out under the direction of the Welding Standards Committee to take account of the requirements of ISO 2553-1974 published by the International Organization for Standardization (ISO). As a result the general content and presentation have been changed to align with ISO 2553.

The elementary symbols depict the form of the weld to be made regardless of the welding process to be employed, which was not always the case with the symbols in the previous edition of this standard. These symbols may be qualified by the use of supplementary symbols, dimensional details and complementary indications.

In the absence of a single method being agreed internationally, ISO 2553 provisionally recognizes that the position of the symbol relative to the reference line should depend on the method of drawing projection used in the particular

case. It was felt that this situation should not be carried over into this standard and therefore the practice of placing the symbol below the reference line for welds on the 'arrow side' remains unaltered in this revision, for both third and first angle projection. Because of the existence of two systems of positioning the symbol, however, it is strongly recommended that all drawings should clearly state which system has been employed.

In order to simplify drawings, it is recommended that requirements relating to the preparation and making of welds should be included on the welding procedure sheets. For typical information to appear on welding procedure sheets for various processes, reference should be made to the appendices in BS 499 : Part 1, while an example of the layout of a typical welding procedure test record is given in the appendix of BS 4870 : Part 1.

Amendment No. 2
published and effective from 15 November 1992
to BS 499 : Part 2 : 1980

Welding terms and symbols
Part 2. Specification for symbols for welding

Revised text

AMD 7439
November 1992

Table 10

Delete the entire text and substitute the following:

‘Refer to BS EN 24063 : 1992.’

AMD 7439
November 1992

Standards publications referred to

At the end of the list of publications, delete the reference to ISO 4063 and substitute the following:

‘BS EN 24063 : 1992 Welding, brazing, soldering and braze welding of metals — Nomenclature of processes and reference numbers for symbolic representation on drawings’

British Standard

Welding terms and symbols

Part 2. Specification for symbols for welding

1. Scope

This Part of BS 499 specifies requirements for the symbolic representation of welds on drawings. For the most common types of weld the scheme provides basic indications regarding the welds to be made without over-burdening the drawing with notes or showing an additional view. The scheme is not intended to apply to complex joints, involving multiple welds for example, for which it may be simpler to show on the drawing a separate detailed view of the joint and welds required.

2. References

The titles of the standards publications referred to in this standard are listed on the inside back cover.

3. Symbols

3.1 Elementary symbols. The various types of weld are each characterized by a symbol which, in general, is representative of the shape of the weld to be made or the edge preparation to be used. The symbol is not to be taken to pre-judge the welding process to be employed.

The type of weld shall be indicated by the appropriate elementary symbol given in table 1. Examples are given in table 5. The vertical portions of the symbols for single-bevel butt, single-J butt and fillet welds shall always be on the left-hand side of the symbol irrespective of the orientation of the weld metal. The symbols shall apply to the respective welds regardless of the number of runs to be deposited, whether or not there is a root gap and whether or not there is backing material, as such details shall be given on the welding procedure sheet.

3.2 Combinations of elementary symbols. For welds made from two sides, combinations of elementary symbols shall be used. Examples are given in table 6.

In the case of compound welds, e.g. a fillet weld super-

imposed on a single-bevel butt weld, the appropriate combination of symbols shall be used, but the scheme of symbols is not intended to apply to complex joints. Examples are given in table 7.

3.3 Supplementary symbols. When the external surface of the weld is required to be of a particular shape, the appropriate supplementary symbol given in table 2 shall be used in conjunction with the relevant elementary symbol. Examples are given in tables 3 and 8.

4. Position of symbols

4.1 General. The symbols shall be used in conjunction with an arrow line and a reference line. Their method of representation is shown in figure 1.

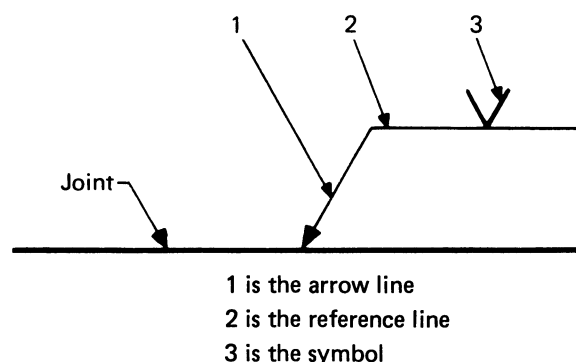
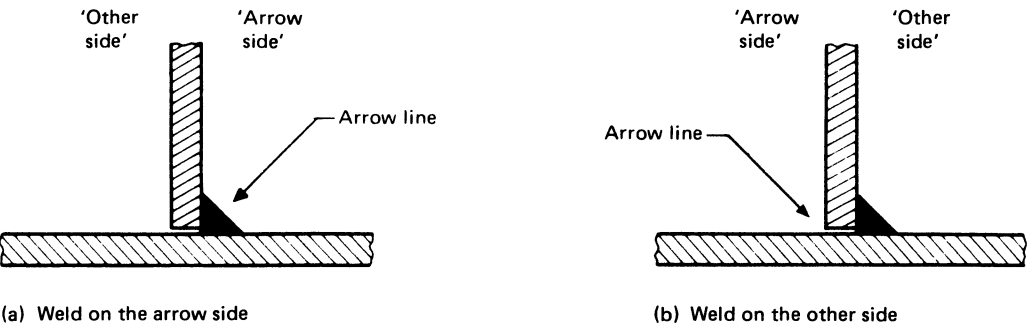


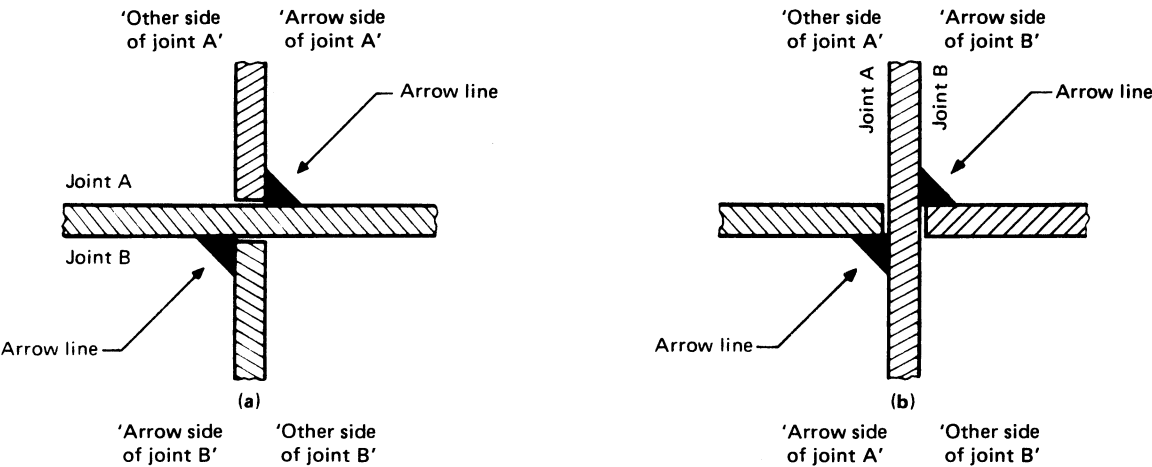
Figure 1. Method of representation

4.2 Arrow line relative to the joint. To indicate the position of a weld in a particular joint relative to the parts being joined, the 'head' of an arrow shall be used to denote the 'reference side' of the joint. The side nearer the arrow head shall be known as the 'arrow side' and the remote side as the 'other side'. Examples are given in figures 2 and 3.



NOTE. The position of the arrow in these sketches is chosen for purposes of clarity. Normally, it would be placed immediately adjacent to the joint.

Figure 2. T-joint with one fillet weld



NOTE. The position of the arrow in these sketches is chosen for purposes of clarity. Normally, it would be placed immediately adjacent to the joint.

Figure 3. Cruciform joint with two fillet welds

4.3 Position of the arrow line. The position of the arrow line with respect to the weld is generally of no special significance, but in the case of joints in which only one part is prepared the arrow shall point towards that part.

The arrow line shall join one end of the reference line such that it forms an angle with it. Examples are given in figure 4. NOTE. When the arrow cannot point to a joint, symbolic representation cannot be used.

4.4 Position of the reference line. The reference line shall be a straight line preferably drawn parallel to the bottom edge of the drawing.

4.5 Symbol relative to the reference line. The position of the symbol relative to the reference line shall be in accordance with the requirements of table 4, irrespective of the method of drawing projection employed.

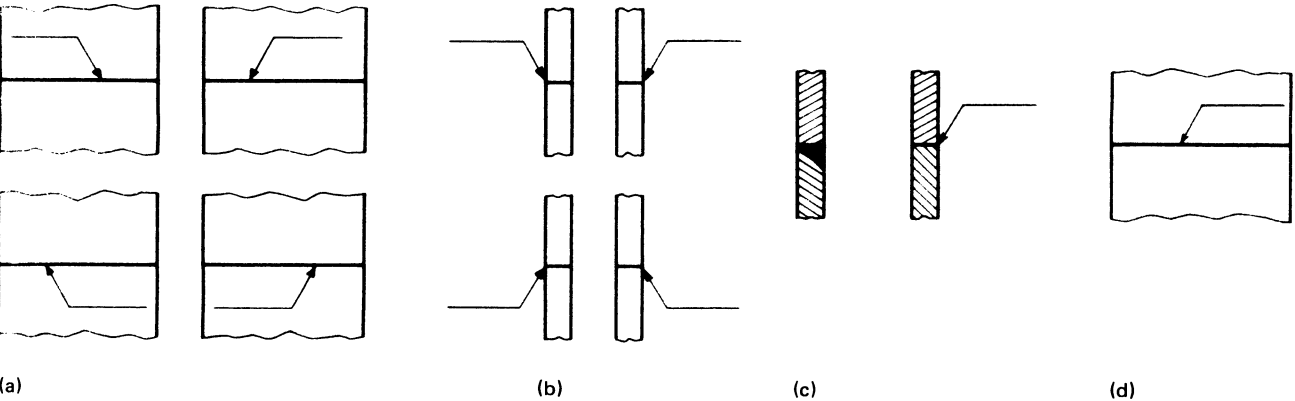


Figure 4. Position of the arrow line

5. Dimensions

5.1 General. Where a symbol is accompanied by a certain number of dimensions, expressed in millimetres, the indication of these dimensions, illustrated in figure 5, shall be as follows:

- (a) dimensions relating to the cross section of the weld shall be given on the left-hand side of the symbol;
- (b) longitudinal dimensions shall be given on the right-hand side of the symbol; distances between adjacent weld elements shall be indicated in parenthesis.

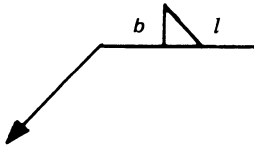


Figure 5. Example of the indication of dimensions

The main dimensions to be indicated, and how they are used, shall be as given in table 9. Any other significant dimensions shall be included on the welding procedure sheets. The dimensions that locate the weld in relation to the edges of the parts being welded shall be given on the drawing.

5.2 Butt welds. In the absence of any dimensional indications to the contrary, it shall be taken that butt welds are intended to have full penetration and to be continuous along the entire length of the joint.

5.3 Fillet welds. In the absence of any dimensional indications to the contrary, it shall be taken that fillet welds are intended to be continuous along the entire length of the joint.

The cross-sectional dimension to be indicated for a fillet weld shall be the leg length. When it is also desired to indicate the design throat thickness, then the leg length dimension shall be prefixed with the letter 'b' and the design throat thickness dimension shall be prefixed with the letter 'a'.

In the case of a fillet weld having unequal legs, the orientation of the weld shall be indicated on the drawing, unless the formation of the joint makes this obvious, and both leg length dimensions shall be given, separated by a multiplication sign.

NOTE. The following preferred range of leg length dimensions, in millimetres, should be used for the dimensioning of fillet welds: 3, 4, 5, 6, 8, 10, 12, 16, 18, 20, 22 and 25.

6. Complementary indications

6.1 Peripheral welds. Where a weld is to be made all round a joint, this shall be indicated by a circle placed where the arrow line joins the reference line, as shown in figure 6.

6.2 Site welds. Welds to be made on site shall be differentiated from shop welds by the indication of a flag where the arrow line joins the reference line, as shown in figure 7.

6.3 Non-destructive testing. When it is desired to indicate that non-destructive testing, other than visual examination, of a weld is required, the symbol shown in figure 8 shall be placed near to the end of the reference line.

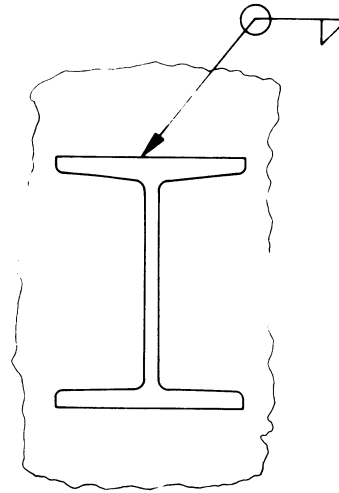


Figure 6. Use of symbol for peripheral welds

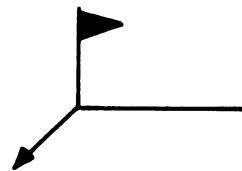


Figure 7. Use of symbol for site welds

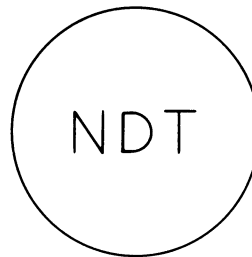


Figure 8. Symbol for non-destructive testing

6.4 Welding process. Information regarding the welding process to be used is given on the welding procedure sheet. When it is also desired to indicate the process as part of the symbolic representation, the appropriate number in table 10* shall be placed within a 'fork' at the end of the reference line as shown in figure 9.

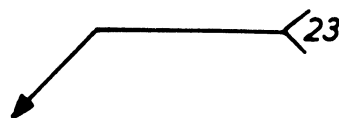


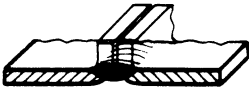
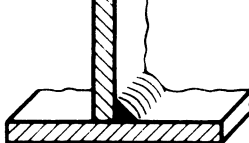
Figure 9. Example of the indication of process

7. Marking

All drawings complying with this standard shall be marked:
'The welding symbols on this drawing comply with BS 499 : Part 2 : 1980'.

*Complies with International Standard ISO 4063.

Table 1. Elementary symbols

No.	Designation	Illustration	Symbol
1	Butt weld between flanged plates* (the flanges being melted down completely)		
2	Square butt weld†		
3	Single-V butt weld		
4	Single-bevel butt weld		
5	Single-V butt weld with broad root face		
6	Single-bevel butt weld with broad root face		
7	Single-U butt weld		
8	Single-J butt weld		
9	Backing or sealing run		
10	Fillet weld		

*Butt welds between flanged plates (symbol 1) not completely penetrated are symbolized as square butt welds (symbol 2) with the weld thicknesses shown (see table 10).

†This symbol is used to indicate a stud weld when there is no end preparation and no fillet weld.