

TECHNICAL GUIDE · QUICK REFERENCE

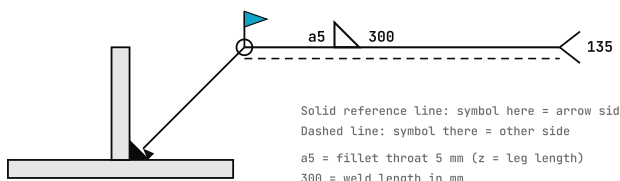
Welding Symbols Explained (BS EN ISO 2553)

A weld symbol has an arrow pointing at the joint, a reference line, and a symbol showing the weld type. In ISO 2553 system A, used on most UK and European drawings, a symbol on the solid line means the weld is on the arrow side; on the dashed line it is on the other side. For fillet welds, 'a' gives the throat thickness and 'z' the leg length, in mm.

MARK	MEANING	EXAMPLE
Solid reference line	Weld on the arrow side	Symbol sits on the solid line
Dashed line	Weld on the other side	Symbol sits on the dashed line
Symbol on both lines	Weld both sides	Double fillet
a before a fillet	Throat thickness (mm)	a5
z before a fillet	Leg length (mm)	z7
Number after the symbol	Weld length (mm)	300
n × l (e)	Intermittent: number × length (gap)	3 × 50 (100)
Flag	Site (field) weld	Flag at the arrow/reference junction
Circle	Weld all round	Circle at the junction
Tail	Process or other information	135 = MAG, 111 = MMA, 141 = TIG

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Example: 5 mm throat fillet weld, 300 mm long, arrow side, all round, made on site by MAG welding.



Solid reference line: symbol here = arrow side
Dashed line: symbol there = other side
a5 = fillet throat 5 mm (z = leg length)
300 = weld length in mm
Flag = site (field) weld · circle = weld all round
Tail: process number, e.g. 135 MAG (ISO 4063)

 Fillet

 Single V butt

 Single bevel butt

 Square butt

 Plug / slot

Weld symbols · reading an ISO 2553 symbol (system A)

BS EN ISO 2553:2019

Reading a symbol

Read in this order: which joint (the arrow), which side (solid or dashed line), what type (the symbol), what size (numbers left of the symbol), how long (numbers right of the symbol), and any extras (flag, circle, tail).

Common basic symbols

- Fillet: a right-angled triangle. The most common weld in steelwork and balustrades.
- Single V butt: a V. Both plates bevelled; often used for full-penetration joints.
- Single bevel butt: one vertical line and one sloping line. Only one plate bevelled.
- Square butt: two parallel lines. Thin material, no bevel.
- Plug or slot: a rectangle. Weld through a hole in one plate.

System A and system B

ISO 2553 allows two methods. System A, with a dashed identification line, is the usual method in the UK and Europe. System B uses one reference line, with the arrow side below it, as in the American AWS standard. The drawing should state which is used.

Weld quality and inspection are set separately, through the execution class (see BS EN 1090 execution classes).

Making the weld: the Interactive Welding Guide has a weld finder for passes, rod and wire sizes and typical settings for each fillet size and position.

Common questions

What does the dashed line on a weld symbol mean?

In ISO 2553 system A, the dashed line is the identification line. A weld symbol placed on the dashed line means the weld is on the other side of the joint from the arrow. A symbol on the solid reference line means the arrow side.

What is the difference between 'a' and 'z' on a fillet weld?

'a' is the design throat thickness: the height of the largest triangle that fits in the weld. 'z' is the leg length. For an equal-leg fillet, z is about $1.4 \times a$, so $a5$ is roughly $z7$.

What does a flag on a weld symbol mean?

The weld is to be made on site, not in the fabrication shop. A circle at the same point means the weld goes all the way round the joint.

Sources

1. BS EN ISO 2553:2019 welding and allied processes: symbolic representation on drawings, welded joints (BSI/ISO)
2. TWI: a review of the application of weld symbols on drawings · <https://www.twi-global.com/technical-knowledge/job-knowledge/weld-symbols>
3. BS EN ISO 4063 welding and allied processes: nomenclature of processes and reference numbers (BSI/ISO)

Full guide: www.koyda.com/guides/welding-symbols/

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