

Beginner Weld Symbols Guide

Understanding AWS A2.4 Welding Symbols - Essential Reference for Blueprint Reading

Weld Symbol Anatomy

A complete welding symbol consists of these elements:

- Reference Line: Horizontal line containing all weld information
- Arrow: Points to joint location, connects reference line to joint
- Weld Symbol: Specific symbol indicating weld type (fillet, groove, plug, etc.)
- Dimensions: Size, length, pitch, and other measurements
- Tail: Contains supplementary information (process, electrode, etc.) - optional
- Other Side/Arrow Side: Symbol placement indicates which side of joint to weld
- Finish Symbols: Letters indicating finish method (G=grind, C=chip, M=machine)
- Field Weld Symbol: Flag indicates weld performed in field vs. shop
- Weld-All-Around Symbol: Circle indicates weld continuous around joint

Symbol Placement Rules

Symbol Location	Meaning
Below reference line (arrow side)	Weld on arrow side of joint (side arrow points to)
Above reference line (other side)	Weld on opposite side from arrow
Both sides of reference line	Weld both sides of joint
Symbol on line (not above/below)	No side significance - weld location obvious

Common Weld Symbols

Symbol	Name	Typical Size Notation	Description
Triangle	Fillet Weld	Leg size (e.g., 1/4)	Most common symbol, 90° angle legs
Rectangle	Plug/Slot Weld	Diameter or width	Fill hole or slot in top piece
V-shape	V-Groove Weld	Depth of prep	Single-V butt joint preparation
Double-V	Double-V Groove	Depth each side	V-groove both sides
U-shape	U-Groove Weld	Depth of prep	Curved groove preparation
J-shape	J-Groove Weld	Depth of prep	One-sided curved groove
Square	Square-Groove	None usually	Butt joint, no bevel or groove
Bevel	Bevel-Groove	Bevel angle & depth	One member beveled
Flag	Field Weld	N/A	Indicates weld made in field
Circle on ref line	Weld-All-Around	N/A	Continuous weld around joint

Reading Weld Size Dimensions

Weld Type	Size Location	Meaning
Fillet weld	Left of symbol	Leg length (both legs equal unless noted)
Groove weld	Left of symbol	Depth of groove preparation
Plug/slot weld	Left of symbol	Diameter of hole or width of slot
All welds - length	Right of symbol	Length of weld in inches
All welds - pitch	After length	Center-to-center spacing of intermittent welds

Supplementary Symbols

Symbol	Meaning	Notes
(contour symbols)	Flat, convex, concave	Indicates finished weld contour
G, C, M	Grind, Chip, Machine	Finish method after welding
Weld-all-around (circle)	Continuous weld	Circle at arrow/reference intersection

Field weld (flag)	Field installation	Flag at arrow/reference intersection
Melt-through	Back side reinforcement	Semicircle opposite weld symbol
Backing bar	Permanent or temporary	Rectangle on opposite side
Consumable insert	Insert at root	Square with vertical line
Stud weld	Arc stud welding	Stud symbol with size notation

Common Examples for Beginners

- 1. Fillet weld, 1/4" leg, both sides: Symbol appears both above and below reference line, '1/4' to left of each
- 2. Fillet weld, arrow side only, 3/16": Symbol below reference line, '3/16' to left
- 3. Intermittent fillet, 1/4" × 2" at 6" centers: '1/4' left of symbol, '2-6' to right (2" weld, 6" pitch)
- 4. V-groove with 1/4" fillet: V-symbol for groove prep, triangle symbol for fillet cap
- 5. Weld-all-around 1/4" fillet: Circle at arrow junction, '1/4' to left of fillet symbol
- 6. Field weld, 5/16" fillet, grind flush: Flag at arrow, '5/16' left of symbol, 'G' for grind finish

Tail Information

The tail (when present) contains process and specification details:

- Welding process: SMAW (stick), GMAW (MIG), GTAW (TIG), FCAW (flux-core), etc.
- Electrode/filler metal specification: E7018, ER70S-6, ER308L, etc.
- Welding procedure specification (WPS) number if applicable
- Special instructions or notes
- If no tail present, weld per standard shop practice

Tips for Reading Weld Symbols

- 1. Start by identifying the reference line and arrow
- 2. Determine which side to weld (above=other side, below=arrow side)
- 3. Identify the weld type from the symbol shape
- 4. Read dimensions: size (left), length (right), pitch (after length)
- 5. Check for supplementary symbols (field weld, weld-all-around, finish)
- 6. Read tail for process, electrode, or special instructions
- 7. When in doubt, ask! Incorrect interpretation can result in costly rework
- 8. Practice with actual drawings - understanding improves with use