



Republic of the Philippines
Department of Education
National Capital Region
Schools Division Office – Muntinlupa City

SPECIAL PROGRAM FOR TECHNICAL VOCATIONAL EDUCATION (SPTVE)
SHIELDED METAL ARC WELDING 7 / QUARTER 3 WEEK 4

- I. Topic: INTERPRET STANDARD DRAWINGS AND SYMBOLS
II. Objectives: Interpret welding joints and symbols according to drawing standards
III. Brief Introduction of the Lesson

Welding Symbol

Location of Elements: The elements of a welding symbol have standard locations with respect to each other.

Location Significance of Arrow: The arrow element in a welding symbol in conjunction with the reference line determines the arrow side and other side of a weld. The symbol depicting an arrow side weld is always placed below the reference line. The arrow side is always closest to the reader when viewed from the bottom of the drawing. The weld symbol depicting other side weld is placed above the reference line, away from the reader. Welds on both sides of a joint are shown by placing weld symbols on both sides of the reference line.

Some weld symbols have no arrow or other side significance. However, supplementary symbols used in conjunction with these weld symbols may have such significance. For example, welding symbols for resistance spot and seam welding have no side significance, but GTAW, EBW, or other spot and seam welds may have arrow and other side.

References: When a specification, process, test, or other references are needed to clarify a welding symbol, the reference is placed in a **tail** on the welding symbol. The letters complete joint penetration (CJP) may be used in the tail of the arrow to indicate that a complete joint penetration groove weld is required, regardless of the type of weld or joint preparation. The tail may be omitted when no specification, process, or other reference is required with a welding symbol.

Dimensions: Dimensions of a weld are shown on the same side of the reference line as the weld symbol. The size of the weld is shown to the left of the weld symbol, and the length of the weld is placed on the right. If a length is not given, the weld symbol applies to that portion of the joint between abrupt changes in the direction of welding or between specified dimension lines. If a weld symbol is shown on each side of the reference line, dimensions are required to be given for each weld even though both welds are identical.

Either US Customary or SI units may be used when specifying dimensions. However, only one of the two should be used for a product or project.

If a weld in a joint is to be intermittent, the length of the increments and the pitch (center-to-center spacing) are placed to the right of the weld symbol.

The term **weld symbol** and **welding symbol** have different meanings. A weld symbol indicates the required type of weld. The welding symbol includes the weld symbol and supplementary information. A complete welding symbol consists of the following elements:


- Reference line
- Basic weld symbol
- Supplementary symbol
- Tail
- Arrow
- Dimensions and other data
- Finish symbol
- Specification, process and other references

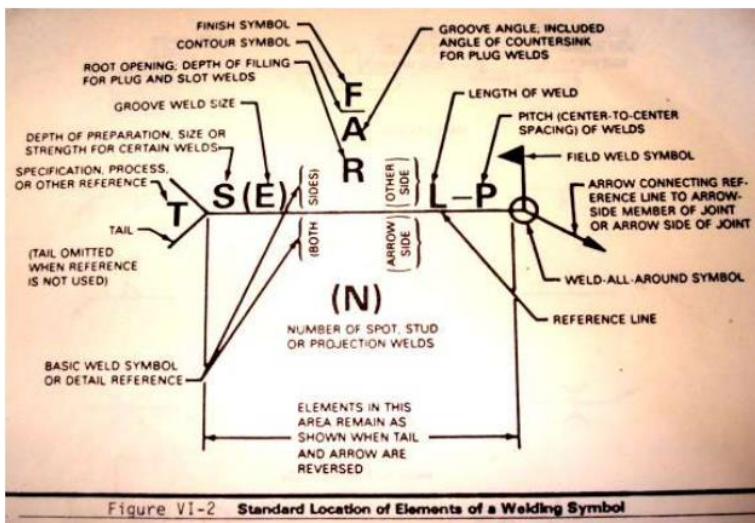




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F – Finish Symbol
A – Groove Angle: included angle of countersink for plug welds
R – Root Opening; depth of filling for plug and slot welds.
S – Depth of Bevel: size or strength for certain welds
E – Groove Weld Size
L – Length of Weld
P – Pitch of Weld: center-to-center spacing
T – Tail of Weld: specification, process of other reference (omitted when reference is not used)
N – Number of Spot, Stud, or Projection Welds

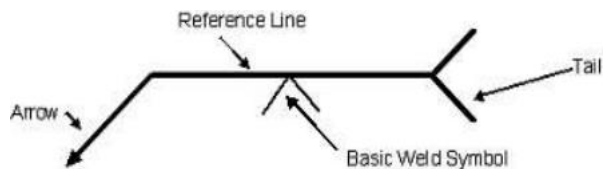
 - Field Weld
 - Weld All Around
 - Contour Symbol



MEANING & USE OF SYMBOLS

An arc welding symbol consists of the main four parts

1. A reference line
2. An arrow.
3. A basic welding symbol
4. A tail



The basic symbol indicates the type of weld.

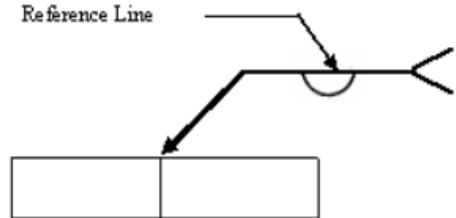




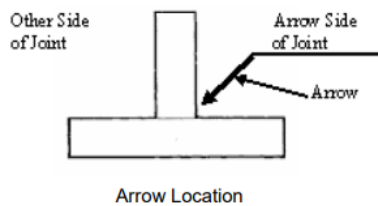
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(Butt, fillet, etc.)

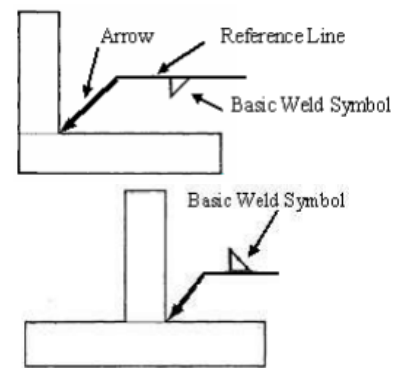
1. The **reference line** is a line connected to the arrow. The position of the basic symbol above or beneath this line determines the location of the weld. The reference line is always drawn parallel to the bottom edge of the drawing, or to the base line of a particular view.



2. The arrow indicates the position of the weld; it is drawn at an angle from the end of the reference line to one side of the joint. This side is called the „arrow side of the joint“. The opposite side is called the other side of the joint.

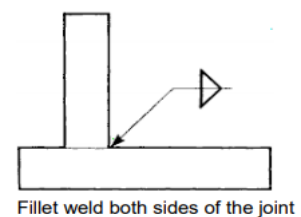


Welds on the „arrow side of the joint“ are shown by inverting the weld symbol and placing it beneath the reference line.



Symbol Indicating Fillet Weld At Arrow Side of Joint

Welds on the „other side of the joint“ are shown by placing the symbols above the reference line.



Symbol indicating fillet welds on the other side of joint.

Welds on both sides of the joint are shown by placing the weld symbol above and below the reference line.

3. Basic weld symbols

Basic weld symbols describe the type of weld to be made. This symbol is a miniature drawing of the metal's edge preparation prior to welding. The basic weld symbol is only part of the entire AWS welding symbol.

FORM OF WELD	WELD SYMBOL	SECTIONAL REPRESENTATION
BEAD		
FILLET		
SQUARE BUTT		
SINGLE V BUTT		
SINGLE BEVEL BUTT		



Centennial Ave.
 Telephone No.:
 www.depedmu









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IV. Activities:

Activity 1: Direction: Match column A with column B then write the letter of your answer

1 SQUARE BUTT	A 
2 SINGLE U BUTT	B 
3 PLUG AND SLOT	C 
4 BEAD	D 
5 FILLET	E 
6 STUD	F 
7 SINGLE V BUTT	G 
8 SINGLE BEVEL BUTT	H 
9 DOUBLE U BUTT	I 
10 SINGLE J BUTT	J 

Activity 2: On a piece of paper, draw the SECTIONAL REPRESENTATION of the WELD SYMBOLS in Activity 1.
Take note of the WELD SYMBOLS FROM A TO J.

V. Assessment: Multiple Choice - Directions: Choose the letter of the correct answer.





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1. This is information used as a guide by the welder in constructing or assembling metal products.
a. Drawings b. Sketches c. Weld Symbols d. Welding Symbols
2. Parts of the welding symbol used to indicate position of the weld.
a. Reference Line b. Weld Symbol c. Arrow d. Tail
3. The symbol triangle attached to the reference line indicates the type of weld.
a. Bead b. Fillet c. Square Butt Weld d. Single V Butt Weld
4. When special notes are required for the welder to be informed, part of the welding symbol is indicated.
a. Reference Line b. Weld Symbol c. Arrow d. Tail
5. This symbol is a miniature drawing of the metal's edge preparation prior to welding.
a. Reference Line b. Weld Symbol c. Arrow d. T

VI. Reflection: What's the importance each main part of an arc welding symbol?

1. reference line, 2. an arrow, 3. a basic welding symbol 4. tail

References: K to 12 Basic Education Curriculum Technology and Livelihood Education Learning Module

Writer: MYRADEL N. NIETES Validator/s: GERRY V. DOMLANTA



Centennial Ave., Brgy. Tunasan, Muntinlupa City
Telephone No: 805-9935 / 805-9938
www.depedmuntinlupa.edu.ph; sdo.muntinlupa@gmail.com

