**Deciphering Weld Symbols**

When welds are specified on engineering and fabrication drawings, a cryptic set of symbols is used as a sort of shorthand for describing the type of weld, its size, and other processing and finishing information. The purpose of this page is to introduce you to the common symbols and their meaning. The complete set of symbols is given in a standard published by the [American National Standards Institute](http://www.ansi.org) and the [American Welding Society](http://www.aws.org):

*ANSI/AWS A2.4, Symbols for Welding and Nondestructive Testing.*

Our thanks to Dr. Kent L. Johnson, past Chairman of the AWS Chicago Section, for his many helpful comments on the content of our welding pages.

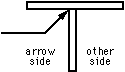
**The structure of the welding symbol**

Weld symbol
structure

The horizontal line--called the *reference line*--is the anchor to which all the other welding symbols are tied. The instructions for making the weld are strung along the reference line. An arrow connects the reference line to the joint that is to be welded. In the example above, the arrow is shown growing out of the right end of the reference line and heading down and to the right, but many other combinations are allowed.

Arrow
examples

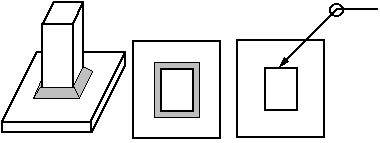
Quite often, there are two sides to the joint to which the arrow points, and therefore two potential places for a weld. For example, when two steel plates are joined together into a T shape, welding may be done on either side of the stem of the T.



The weld symbol distinguishes between the two sides of a joint by using the arrow and the spaces above and below the reference line. The side of the joint to which the arrow points is known (rather prosaically) as the *arrow side*, and its weld is made according to the instructions given below the reference line. The other side of the joint is known (even more prosaically) as the *other side*, and its weld is made according to the instructions given above the reference line. The *below=arrow* and *above=other* rules apply regardless of the arrow's direction.

The flag growing out of the junction of the reference line and the arrow is present if the weld is to be made in the field during erection of the structure. A weld symbol without a flag indicates that the weld is to be made in the shop. In older drawings, a field weld may be denoted by a filled black circle at the junction between the arrow and the reference line.

The open circle at the arrow/reference line junction is present if the weld is to go all around the joint, as in the example below.



The tail of the weld symbol is the place for supplementary information on the weld. It may contain a reference to the welding process, the electrode, a detail drawing, any information that aids in the making of the weld that does not have its own special place on the symbol.

**Types of welds and their symbols**

Each type of weld has its own basic symbol, which is typically placed near the center of the reference line (and above or below it, depending on which side of the joint it's on). The symbol is a small drawing that can usually be interpreted as a simplified cross-section of the weld. In the descriptions below, the symbol is shown in both its arrow-side and other-side positions.