

**Tubular Design Guide 20:
Background and design basis**

by

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and

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**Tubular Design Guide 20:
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Six types of weld are included in AS 4100 (Ref. 1):

Complete penetration butt weld—a weld where fusion exists between weld metal and the parent metal throughout the entire depth of the joint. A butt weld is one in which the weld lies substantially within the extension of the planes of the surfaces of one or more of the parts joined.

Incomplete penetration butt weld—a butt weld where, by design, fusion does not extend throughout the full depth of the joint.

Fillet weld—a weld of approximately triangular cross-section which is formed in the corner between the surfaces of two components.

Plug weld—a weld made by completely or partially filling a circular hole in one component with filler metal, with the filler metal fusing to the contiguous component exposed through the hole.

Slot weld—a weld made by depositing a fillet weld around the periphery of an elongated hole in one component so as to join it to the surface of a contiguous component exposed through the hole.

Compound weld—a weld comprising a fillet weld superimposed on a butt weld.

Almost all of the welds used in structural steel connections are either butt welds or fillet welds or a combination of these two weld types, as shown in Figure 4.2.

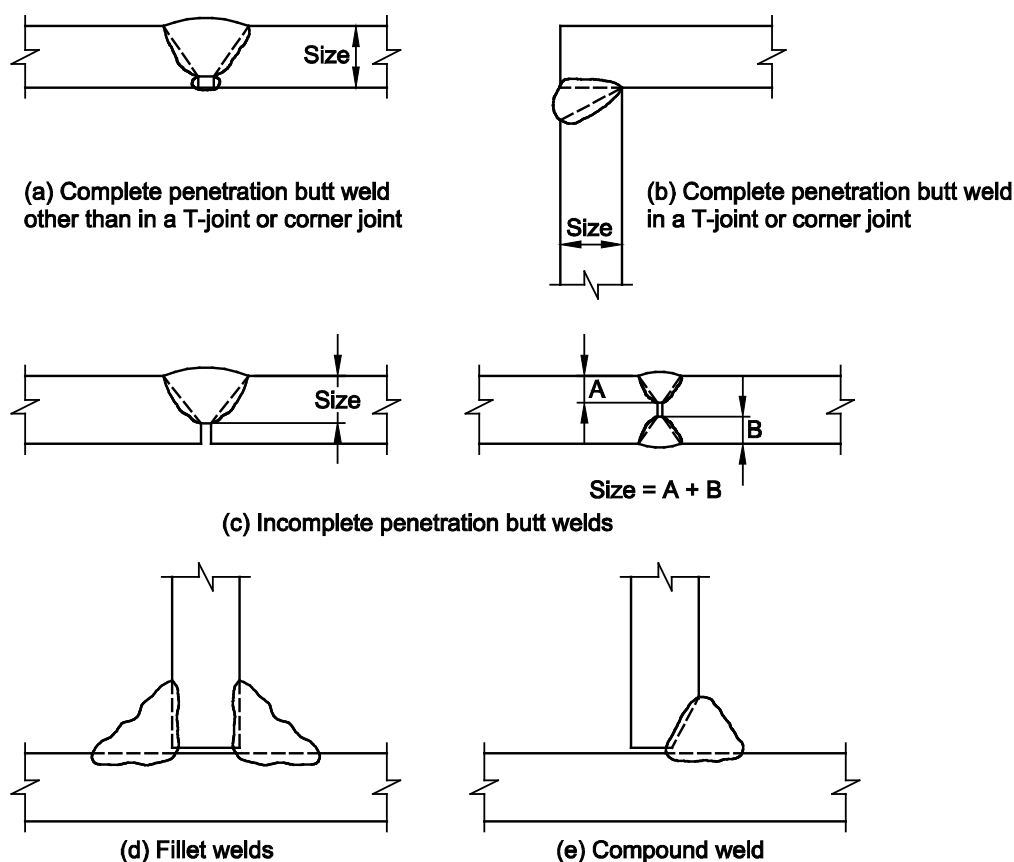


FIGURE 4.2 COMMON STRUCTURAL WELD TYPES IN AS 4100

AS 4100 (Ref. 1) restricts the use of plug and slot welds to applications where these welds either transmit shear in lap joints or where they prevent buckling of lapped parts or where they join component parts of built-up members.

The design and detailing of the six types of weld included in AS 4100 are extensively dealt with in AS 4100 (Ref. 1) and its associated commentary (Ref. 7) as well as in AS 1554.1 (Ref. 33) and ASI Connection Design Guide 2 (Ref. 47).

