

2.4.2.2 Effective Length (Curved). The effective length of a curved fillet weld shall be measured along the centerline of the effective throat.

2.4.2.3 Minimum Length. The minimum length of a fillet weld shall be at least four times the nominal size, or the effective size of the weld shall be considered not to exceed 25% of its effective length.

2.4.2.4 Intermittent Fillet Welds (Minimum Length). The minimum length of segments of an intermittent fillet weld shall be 1-1/2 in [38 mm].

2.4.2.5 Maximum Effective Length. For end-loaded fillet welds with a length up to 100 times the leg dimension, it is allowed to take the effective length equal to the actual length. When the length of end-loaded fillet welds exceeds 100 but not more than 300 times the weld size, the effective length shall be determined by multiplying the actual length by the reduction coefficient β .

$$\beta = 1.2 - 0.2 \left(\frac{L}{100w} \right) \leq 1.0$$

where

β = reduction coefficient

L = actual length of end-loaded weld, in [mm]

w = weld leg size, in [mm]

When the length exceeds 300 times the leg size, the effective length shall be taken as 180 times the leg size.

2.4.2.6 Calculation of Effective Throat. For fillet welds between parts meeting at angles between 80° and 100° the effective throat shall be taken as the shortest distance from the joint root to the weld face of a 90° diagrammatic weld (see Annex A). For welds in acute angles between 60° and 80° and for welds in obtuse angles greater than 100°, the weld leg size required to provide the specified effective throat shall be calculated to account for geometry (see Annex B). For welds in acute angles between 60° and 30°, leg size shall be increased by the Z loss dimension to account for the uncertainty of sound weld metal in the root pass of the narrow angle for the welding process to be used (see 2.4.3).

2.4.2.7 Reinforcing Fillet Welds. The effective throat of a combination PJP groove weld and a fillet weld shall be the shortest distance from the joint root to the weld face of the diagrammatic weld minus 1/8 in [3 mm] for any groove detail requiring such deduction (see Figure 3.3 and Annex A).

2.4.2.8 Minimum Size. The minimum size fillet weld shall not be smaller than the size required to transmit the applied load nor that provided in 5.14.

2.4.2.9 Maximum Weld Size in Lap Joints. The maximum fillet weld size detailed along the edges of base metal in lap joints shall be the following:

(1) the thickness of the base metal, for metal less than 1/4 in [6 mm] thick (see Figure 2.1, Detail A).

(2) 1/16 in [2 mm] less than the thickness of the base metal, for metal 1/4 in [6 mm] or more in thickness (see Figure 2.1, Detail B), unless the weld is designated on the shop drawing to be built out to obtain full throat thickness for a leg size equal to the base metal thickness. In the as-welded condition, the distance between the edge of the base metal and the toe of the weld may be less than 1/16 in [2 mm] provided the weld size is clearly verifiable.

2.4.2.10 Effective Area of Fillet Welds. The effective area shall be the effective weld length multiplied by the effective throat.

2.4.3 Skewed T-Joints

2.4.3.1 General. T-joints in which the angle between joined parts is greater than 100° or less than 80° shall be defined as skewed T-joints. Prequalified skewed T-joint details are shown in Figure 3.11. The details of joints for the obtuse and acute sides may be used together or independently depending upon service conditions and design with proper consideration for effects of eccentricity.

2.4.3.2 Welds in Acute Angles Between 80° and 60° and in Obtuse Angles Greater than 100°. When welds are deposited in angles between 80° and 60° or in angles greater than 100° the contract documents shall specify the required effective throat. The shop drawings shall clearly show the placement of welds and the required leg dimensions to satisfy the required effective throat (see Annex B).

2.4.3.3 Welds in Angles Between 60° and 30°. When welding is required in an acute angle that is less than 60° but equal to or greater than 30° [Figure 3.11(D)], the effective throat shall be increased by the Z-loss allowance (Table 2.2). The contract documents shall specify the required effective throat. The shop drawings shall show the required leg dimensions to satisfy the required effective throat, increased by the Z-loss allowance (Table 2.2) (see Annex B for calculation of effective throat).

2.4.3.4 Welds in Angles Less than 30°. Welds deposited in acute angles less than 30° shall not be considered as effective in transmitting applied forces except as modified for tubular structures in 4.13.4.2.

2.4.3.5 Effective Length of Skewed T-Joints. The effective length of skewed T-joints shall be the overall length of the full size weld. No reduction shall be