

UNIQUE *Parentage Butting* Slide Rule (source: Canadian Food Inspection Agency)

3.5.2 Double Seam Integrity Factors

The prerequisites for achieving good double seam integrity are:

1. properly formed and undamaged cans and ends;
2. the absence of other material in the seaming areas (e.g., product, excess solder or sealing compound, foreign material);
3. the presence and proper placement of sealing compound in order to fill the prime sealing area which will prevent leakage;
4. the proper mechanical interlocking of the body flange and end curl resulting in overlap; and
5. the compression of the interlocked flange and curl to form the body hook and end hook which are tightly interlocked.

If the first three prerequisites are satisfied then final seam appraisal is based on the latter two prerequisites, namely overlap and tightness rating/pressure ridge. The various measurements of the double seam that may be taken aid in a decision that the overlap and tightness will be sufficient to ensure the sealing compound is properly held under compression.

(a) Overlap

The body and end hooks must overlap sufficiently to ensure that the sealing compound is properly held under compression with the correct seam tightness. The length of the overlap varies with the dimensional guidelines for each seam. In each case, however, a minimum length is provided in the accepted double seam guidelines. See Table 4.1.5.

Percent Overlap - This is defined as the ratio of the overlap length (A), relative to the internal seam length (C), expressed as a percent. See figure 3.5.2.a.

$$\% \text{ Overlap} = A/C \times 100$$

Body Hook Butting - This is another method of quantifying the void in the prime sealing area in the double seam. It is defined as the ratio of the internal body hook length (B), relative to the internal length of the double seam and is usually expressed as a percent (percent body hook butting), see figure 3.5.2.a.

NOTE:

Body hook butting may be taken separately as one of the factors of the double seam integrity. Body hook butting calculations cannot be substituted for overlap measurement in evaluating a double seam. Body hook butting should be considered as one of the factors that may be used for assessing double seams; overlap, tightness and pressure ridge are other important factors. The length of the body hook in relation to the internal length of the seam must be sufficient to

ensure that it is embedded in the lining compound. Experience indicates that a minimum of 70% body hook butting is required to ensure an adequate seal.

Formula for body hook butting - using optical method for measurements:

$$\% \text{ Body Hook Butting} = B/C \times 100$$

Formula for body hook butting - when doing a tear down:

$$\% \text{ Body Hook Butting} = (\text{BH} - 1.1\text{tb} / \text{SL} - 1.1(2\text{te} + \text{tb})) \times 100$$

Where BH = Body Hook Length (use the minimum of the readings taken at points of routine measurement Fig. 4.1.2.a)

tb = Body plate thickness

SL = Seam Length

te = End plate thickness

Double Seam Length - Alternate terms: height

This dimension is an indicator of overlap in that as the length increases, relative to the ideal, the overlap is usually reduced. Seam length is partly dependent on the roll groove profile and the degree of seaming roll wear.

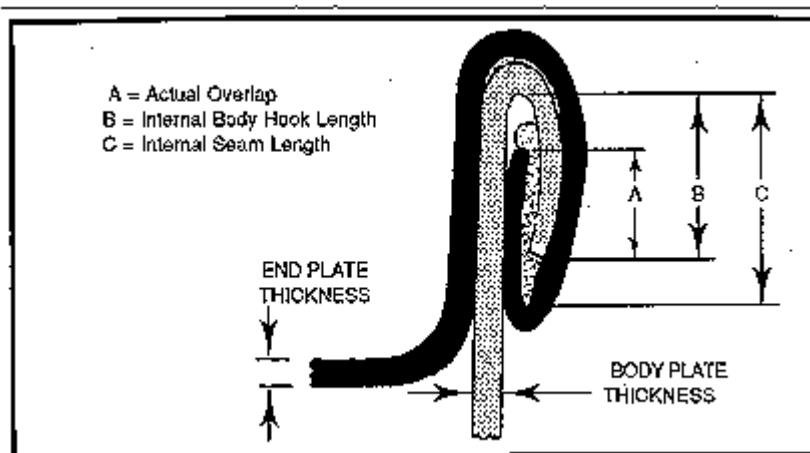


Figure 3.5.2.a - Overlap and Body Hook Butting