

Fitting Dimensions

$$Dp := 5.5 \text{ in}$$

$$A := 1.5 \text{ in}$$

$$e := 1.00 \text{ in}$$

←Inputs

$$d2 := 2 \cdot d = 8.052 \text{ in}$$

$$Dpcheck := \begin{cases} \text{if}(Dp > d2, \text{"modify Dp"}, \text{"ok"}) \\ \text{"ok"} \end{cases}$$

$$La := 2.5 \cdot H = 1.875 \text{ in}$$

$$L1 := \begin{cases} \text{if}(A < La, A, La) \\ 1.5 \text{ in} \end{cases}$$

$$L2 := (2.5 \cdot B) + M = 1.093 \text{ in}$$

$$L := \begin{cases} \text{if}(L1 < L2, L1, L2) \\ 1.093 \text{ in} \end{cases}$$

Area Required

$$A_{pipet} := d \cdot t = 2.512 \text{ in}^2$$

$$A_{ves} := A_{pipet} + (r1^2 \cdot 0.429) = 2.512 \text{ in}^2$$

$$A_r := \begin{cases} \text{if}(A_{ves} > A_{pipet}, A_{ves}, A_{pipet}) \\ 2.512 \text{ in}^2 \end{cases}$$

Area Replaced

$$A_{1h} := (H - t) \cdot d = 0.507 \text{ in}^2 \quad A_{1hh} := 0 \text{ in}^2$$

$$A_1 := \max(A_{1h}, A_{1hh}) = 0.507 \text{ in}^2$$

←Equations that use A and Dp

$$A_{percent} := \frac{A_{rep}}{A_r} \cdot 100 = 73$$

$$A_{percent}(A) := \begin{cases} \text{while } A_{percent} < 100 \\ \quad dttr \leftarrow A - e \\ \quad M \leftarrow A - e \\ \quad L1 \leftarrow \begin{cases} \text{if}(A < La, A, La) \end{cases} \\ \quad L2 \leftarrow (2.5 \cdot B) + M \\ \quad L \leftarrow \begin{cases} \text{if}(L1 < L2, L1, L2) \end{cases} \\ \quad L_v \leftarrow L - M \\ \quad L_h \leftarrow L_v \cdot \tan(\theta) \\ \quad C_y \leftarrow \begin{cases} \text{if}(L_v < 0, L, (L - L_v)) \end{cases} \\ \quad D_x \leftarrow \begin{cases} \text{if}(L_h < 0, \left(\frac{d}{2} + tb\right), \frac{Dp}{2} - L_h) \end{cases} \\ \quad D_y \leftarrow L \\ \quad E_y \leftarrow D_y \\ \quad A_{2and3} \leftarrow ((A_x \cdot B_y) + (B_x \cdot C_y) + (C_x \cdot D_y) + (D_x \cdot E_y) + (E_x \cdot A_y)) - ((A_y \cdot B_x) + (B_y \cdot C_x) + (C_y \cdot D_x) + (D_y \cdot E_x) + (E_y \cdot A_x)) \\ \quad A_{rep} \leftarrow A_1 + A_{2A3} + A_{3a} \\ \quad A_{percent} \leftarrow \frac{A_{rep}}{A_r} \\ \quad A \leftarrow A + \frac{1}{16} \text{ in} \\ \quad A_{percent} \end{cases} = ?$$