

Fillet Welds: Required Throat for Circumference

M := 1.5·m·ton	V _W := 10·ton	T _W := 1·m·ton	nonfactored
d := 30·cm		Sides := 1	1 for only one side 2 for both inner and exterior
Type := 1	1 for building 2 for bridge	Electrode := 1	1 for E60 2 for E70

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ecc := $\frac{M}{V}$

ecc = 0.15 m

P := V

$\tau_{\text{allowable}}$

:= psi·

if Type = 1

13600 if Electrode = 1

15800 otherwise

otherwise

12400 if Electrode = 1

14700 otherwise

a := 2·mm

unwarranted guess

$A_w(a)$

:= $\pi \cdot d \cdot a \cdot \text{Sides}$

$Z_{ew}(a)$

:= $a \cdot \left(\pi \cdot \frac{d^2}{4} \right) \cdot \text{Sides}$

$J_x(a)$

:= $\pi \cdot \frac{d^3}{4} \cdot a \cdot \text{Sides}$

$f_y(a)$

:= $\frac{P}{A_w(a)}$

$f_x(a)$

:= $\frac{P \cdot \text{ecc}}{Z_{ew}(a)}$

$f_z(a)$

:= $\frac{T}{J_x(a)} \cdot \frac{d}{2}$

$$f_r(a) := \sqrt{f_x(a)^2 + f_y(a)^2 + f_z(a)^2}$$

Given

$$f_r(a) = \tau_{\text{allowable}}$$

$$\text{throat} := \text{Find}(a)$$



throat = 2.59 mm

