

Formula to calculate force required for extrusion.

$$k := 30000 \text{ psi}$$

k is extrusion constant

Constants for steel vary: 65000 psi at 800 degrees celcius to 25000 at 1250 degrees celcius
Constants for stainless steel vary from 7000 at 820 degrees celcius to 50000 at 1100 degrees celcius.

$$A_o := 1.535 \text{ in}^2$$

A.o is cross sectional area of chamber

$$A_f := .748 \text{ in}^2$$

A.f is cross sectional area of extrudate

$$f := k \cdot A_o \cdot \ln \left(\frac{A_o}{A_f} \right)$$

f is extrusion force

$$f = 33104.548 \text{ bf}$$