

failure will occur due to
tensile failure in plate.

$$\text{Efficiency of Joint} = \frac{\text{Strength of joint}}{\text{Strength of parent plate}}$$

$$\text{Strength of joint} = 346 \text{ kN}$$

$$\begin{aligned} \text{Strength of plate} &= (\sigma_{\text{max plate}})(t)(l) \\ &= (95 \times 10^6)(20 \times 10^{-3})(250 \times 10^{-3}) = \underline{475 \text{ kN}} \end{aligned}$$

$$\text{Efficiency} = \frac{346}{475} \times 100 = \underline{\underline{72.8\%}}$$

Max Pressure allowed.

$$\text{max force per repeating group} = 346 \text{ kN}$$



$$\begin{aligned} F_x \text{ due to} \\ \text{Pressure} \\ &= (P)(d)(l) \end{aligned}$$

$$F_{\text{pressure}} = (P)(1.25)(0.250)$$

$$F_{\text{tension in boiler wall}} = (2)(F_{\text{max}}) = (2)(346 \times 10^3)$$

↙ equate
↘ & solve

$$P = \frac{(2)(346 \times 10^3)}{(1.25)(0.250)} = \underline{\underline{2.21 \text{ MPa}}}$$