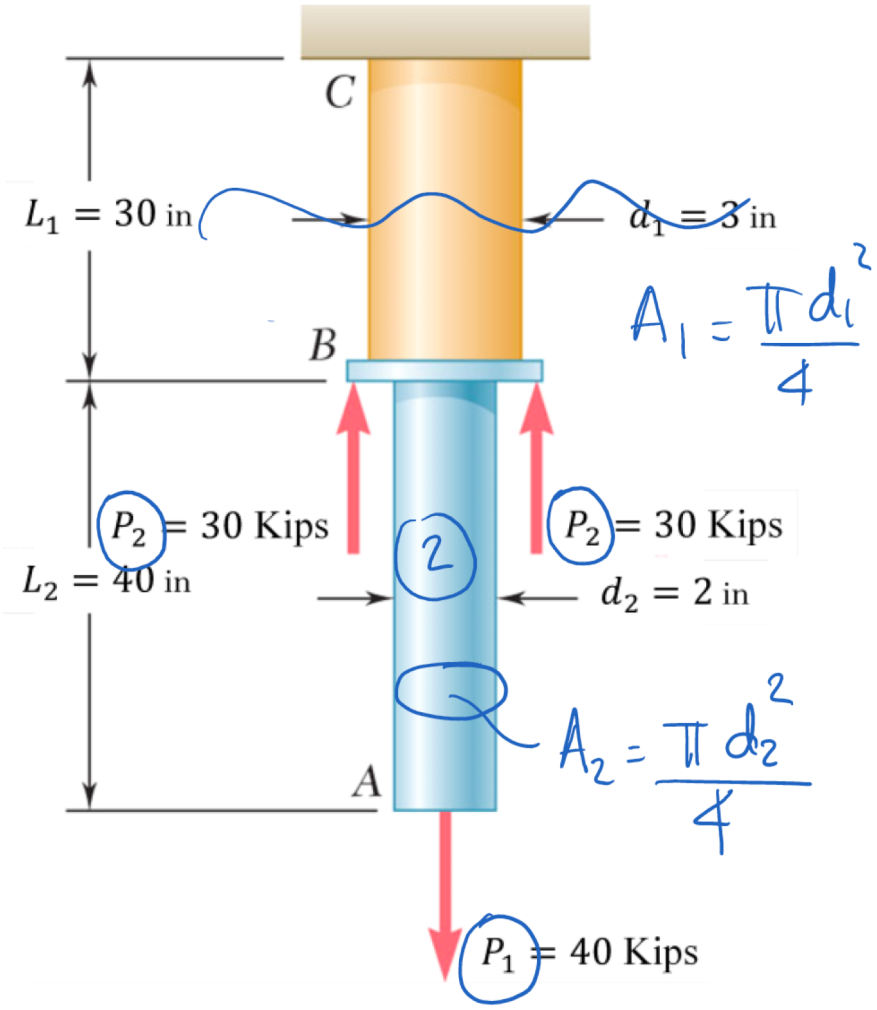
Tuesday, August 29, 2017 10:23 PM



$A_1 = \frac{\pi d_1^2}{4}$

$A_2 = \frac{\pi d_2^2}{4}$

$\sigma_1 = ?$

(A) $-\frac{2P_2}{A_1}$

(B) $\frac{P_2}{A_1}$

(C) $\frac{P_1 - 2P_2}{A_1}$

$\sigma_2 = ?$

(A) $\frac{P_1 - 2P_2}{A_2}$

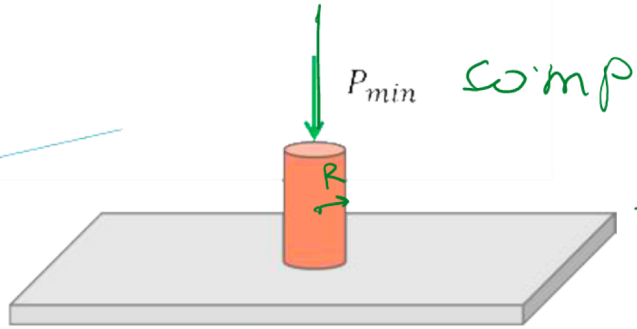
(B) P_1/A_2

(C) $\frac{2P_2 - P_1}{A_2}$

Example 4

http://www.youtube.com/watch?v=9sMXItQjHkE

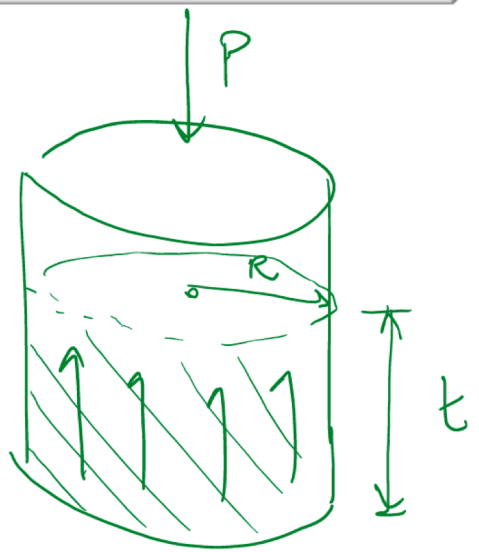
A cylindrical punch of radius R is used to perforate a hole in a metal plate of thickness t. If τ_{max} is the maximum shear stress that the metal will sustain before breaking, what is the minimum force P_{min} that must be applied on the punch in order to perforate the paper?



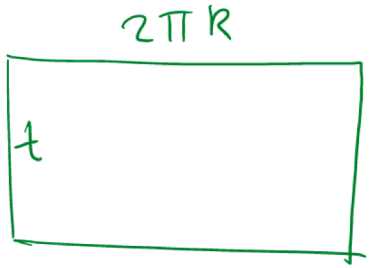
comp

It $\tau = \frac{P}{A}$

$\sigma_{cyl} = \frac{P}{\pi R^2}$



$2\pi R\,t$



(A) πR^2

(B) $2\pi R^2$

(C) $\pi R t$

(D) $2\pi R t$

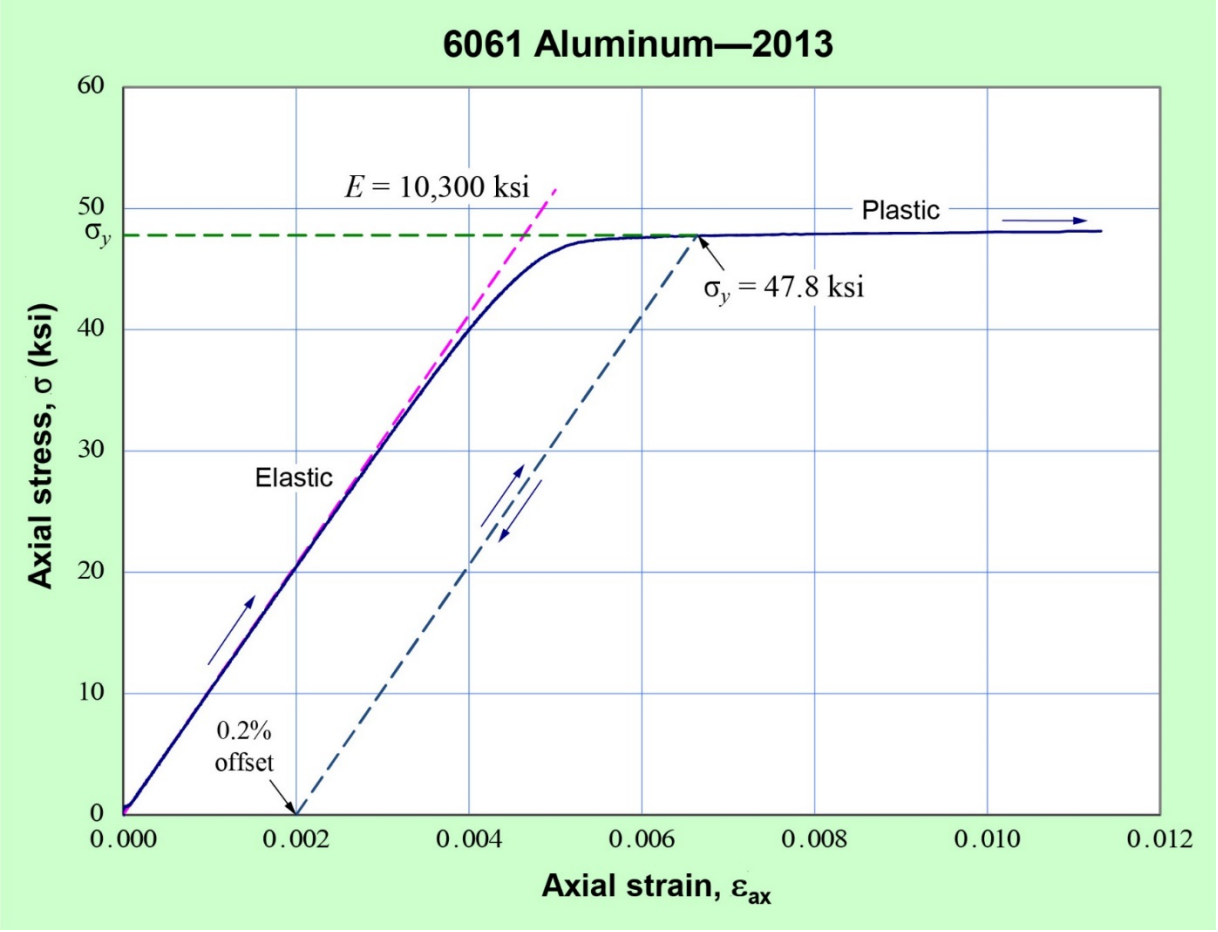
The material below is loaded until it reaches a stress equal to 30 ksi, which corresponds to a strain equal to _____ . After unloading, the material has permanent strain equals to _____.

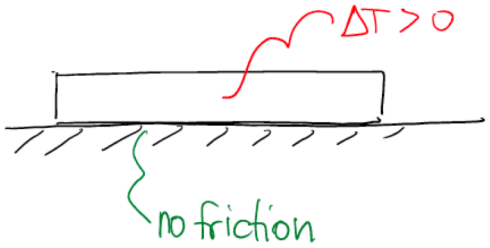
a) 0.003, 0

b) 0.002, 0

c) 0.003, 0.002

d) 0.002, 0.003





(1) What happens to the total deformation?

(A) $\delta > 0$

(B) $\delta < 0$

(C) $\delta = 0$

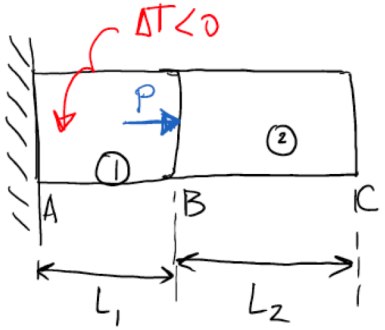
(2) What happens to the stress?

(A) $\sigma > 0$

(B) $\sigma < 0$

(C) $\sigma = 0$

- Fixed at A
- Force applied at B



$E_1 = E_2$

$A_1 = A_2$

(3) Mark the statement that must always be true?

(A) $\delta_1 < 0 \quad \delta_2 > 0$

(B) $\delta_1 + \delta_2 = 0$

(C) $\delta_1 + \delta_2 = \delta_C$

(4) What happens to the stress?

(A) $\sigma_1 \neq 0 \quad \sigma_2 = 0$

(B) $\sigma_1 \neq 0 \quad \sigma_2 \neq 0$

(C) $\sigma_1 = 0 \quad \sigma_2 \neq 0$

(D) $\sigma_1 = \sigma_2$