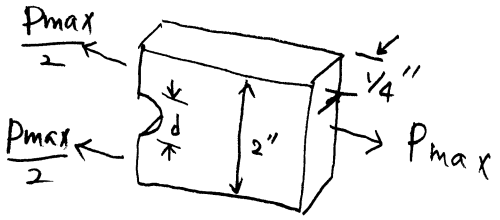
12-331 Solid Mechanics

HW #2 Due: 9/12/2000

1-105

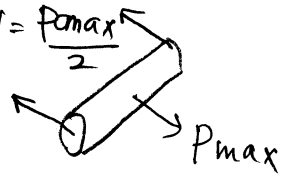


< Tensile >

$$\sigma_{allow} = \frac{P}{A}; \quad 21(10^3) = \frac{P_{max}/2}{(2-d)(1/4)/2}$$

$$= \frac{4(P_{max})}{2-d} \quad \cdots (1)$$

< shear >



$$\tau_{allow} = \frac{V}{A}; \quad 12(10^3) = \frac{P_{max}/2}{\frac{\pi}{4} d^2} \quad \cdots (2)$$

Solving Eq. (1) & (2);

$$d = 0.620 \text{ (in)}$$

$$P_{max} = 7.25 \text{ (kip)}$$