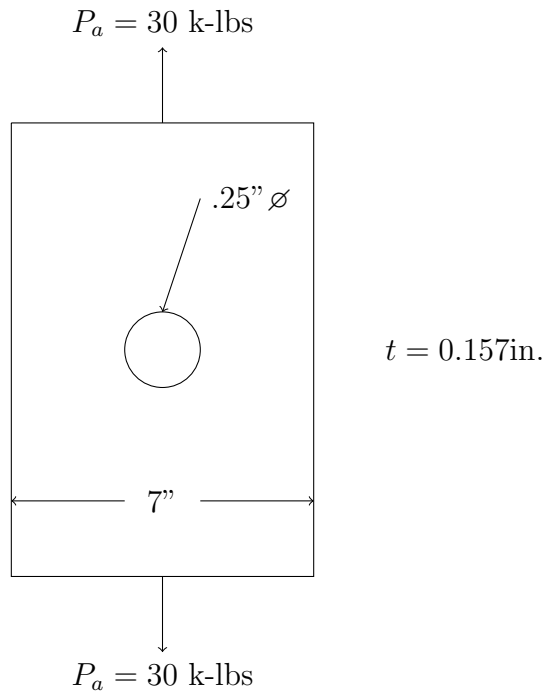


Homework 7

Due 9 Apr 2020

1. For the plate shown below (Al 2024-T4) determine the number of cycles to failure for a fully reversed sinusoidal load of $P_a = 30$ k-lbs.
 - (a) Find K_t
 - (b) Estimate k_f
 - (c) Find the cycles to failure



2. Use the included data file, hw7.txt, which contains strain life experimental data, to calculate the material properties σ'_f , b , ϵ'_f , and c with $E = 10,300$ ksi.
3. For the above data, find the transition fatigue life, N_t
4. Plot the effects of a mean stress of $\sigma_m = 20$ ksi on the above data, assuming $E = 10,300$ ksi, $H' = 142$ ksi and $n' = 0.106$. Compare the Morrow approach, modified Morrow equation, and Smith, Watson, and Topper approach.