

Estimate S-N curve & C.L.F curves for axial loading, of precision steel parts with $S_u = 150$ kpsi $S_y = 120$ kpsi commercially polished surfaces.
Cross sectional dims < 2 in

S-N curve $S(10^3)$ $S_n = S(10^6)$

$S_{10^3} = (0.75)(150) = \underline{112}$ kpsi

$S_n = S_n' C_L C_D C_S$

~~S_n'~~ $S_n' = (0.5)(S_u) = (0.5)(150) = \underline{75}$ kpsi

C_S polished = 0.9

C_L axial = 1.0

C_D precision axial, = 0.9

$S_n = (1.0)(0.9)(0.9)(75) = 61$ kpsi

Estimate S-N curve on log-log paper.

