TENSILE STRENGTH$_{min}$: $TS = \frac{F_u * A}{\Omega} = \frac{70{,}000\ psi * \pi(\frac{D_{2min} + D_{1max}}{4})^2}{5.00}$

(REFER MACHINERY HANDBOOK 26 PAGE 1794)

TS = 58,801 LBS

SAFETY FACTOR : $Sf = \frac{58{,}801\ LBS}{24{,}545\ LBS}$ = 2.40 OK!

STEM THREAD SHEAR CAPACITY PER INCH :

$\frac{V_n}{\Omega} = \frac{F_v * \pi * D_{1max}(0.5 + n * \tan 14.5° * (D_{2min} - D_{1max}))}{1.50}$ = 44,483.22 LBS/IN

(REFER MACHINERY HANDBOOK 26 PAGE 1794)

LIFT NUT HEIGHT = 3.386 IN

TOTAL STEM THREAD SHEAR CAPACITY = $\frac{V_n}{\Omega}$ * LIFT NUT HEIGHT = 150,620 LBS

SAFETY FACTOR : $Sf = \frac{150{,}620\ LBS}{24{,}545\ LBS}$ = 6.14 OK!