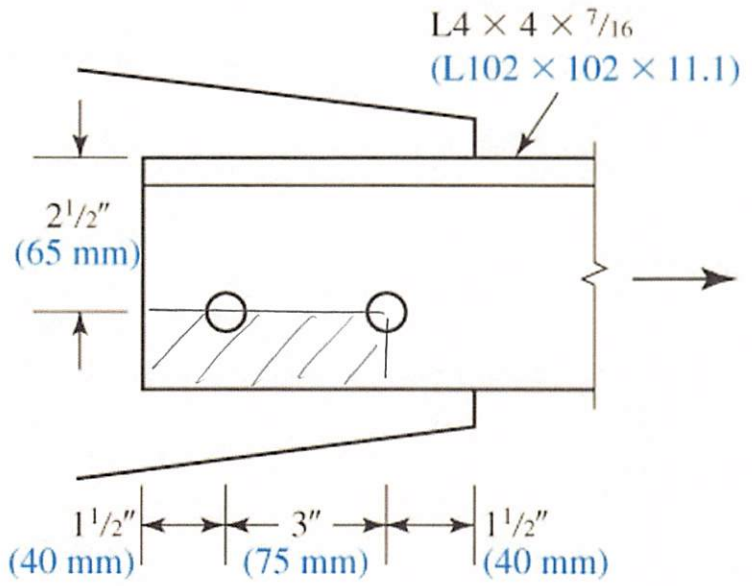
3.5-1 Compute the nominal block shear strength of the tension member shown in Figure P3.5-1. ASTM A572 Grade 50 ($F_y = 50$ ksi (345 MPa); $F_u = 65$ ksi (450 MPa)) steel is used. The bolts are $^7/_8$ inch in diameter (M22).



$t = 7/16''$

$d_{hole} = 7/8\,in + 1/8\,IN = 1\,in$

$U_{BS} = 1$ EQ. J4-5

$$P_n = 0.6F_u A_{nv} + U_{BS}F_u A_{nt} \leq 0.6F_y A_{gv} + U_{BS}F_u A_{nt}$$

$A_{gv} = (7/16in)(4.5in) = 1.9688\,in^2$

$A_{nv} = (7/16in)(4.5in - 1.5(1in)) = 1.3125\,in^2$

$A_{nt} = (7/16in)(1.5in - 0.5(1in)) = 0.4375\,in^2$

$R_n = 0.6(65ksi)(1.3125in^2) + (1)(65ksi)(0.4375in^2)$

$= \underline{79.63^{k}}$ *

UPPER LIMIT

$0.6(50ksi)(1.9688in^2) + (1)(65ksi)(0.4375in^2)$

$= \underline{87.50k}$