$D = 170\,mm$

$L = 15\,mm$

$N = 1450\,rev/min$

$Q = 0.015\,m^3/s$

$K = .9$

$U_2 = \pi D N/60 = \pi \times .17 \times 1450/60 = 12.906\,m/s$

$V_{R2} = Q/A_2 = .015/(\pi \times .17 \times .015 \times .9) = 2.08\,m/s$
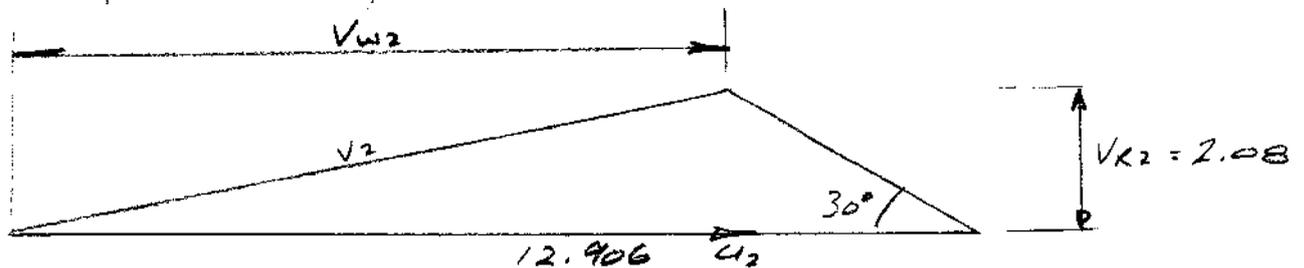
$V_{W2} = 12.906 - 2.08 \angle t\,30° = 9.3\,m/s$

$V_2^2 = 9.3^2 + 2.08^2 = 90.81$ $V_2 = 9.53\,m/s$

$KINETIC\ HEAD = V_2^2/2g = 90.81/2g = 4.628\,m$

$HEAD\ RECOVERED = 35\% \times 4.628 = 1.62\,m$

$HEAD\ LOST = 3.00$

$MANOMETRIC\ HEAD = U_2 V_{W2}/g = 12.906 \times 9.3/g = 12.23\,m$

$\Delta h\,(actual) = 12.23 - 3 = 9.23\,m$

$\eta_{MAN} = 9.23/12.23 = 75.3\%$

$D.P. = \dot{m} U_2 V_{W2} = 15 \times 12.906 \times 9.3 = 1.8\,kW$

$W.P. = \dot{m} g \Delta h = 15 \times 9.81 \times 9.23 = 1.358\,kW$

$\eta = 1.358/1.8 = 75.4\%$