

October 18, 2013

NAME

Fluids-ID

Quiz 7. The horizontal nozzle in the Figure has $D_1=10$ in and $D_2 =6$ in. The inlet pressure $p_1=60$ psia (absolute pressure), and the exit velocity $V_2=85$ fps. Compute the tensile force on the flange bolts, F_B . Assume incompressible steady flow. Density of the fluid flowing through the nozzle is $\rho = 1.94$ slugs/ft³.

- Linear momentum equation:

$$\frac{\partial}{\partial t} \int_{CV} \underline{V} \rho dV + \sum_{CS} \dot{m}_{out} \underline{V}_{out} - \sum_{CS} \dot{m}_{in} \underline{V}_{in} = \sum \underline{F}$$

Note: Attendance (+2 points), format (+1 point)

