An open-tube manometer is a simple device for measuring pressure. It has a U-shaped tube containing liquid with a density $\rho$. One end opens to the air, and the other is connected to a system of unknown pressure $P$. Here $P$ is the absolute pressure. The gage pressure is defined to be $P_g = P - P_0$, which is equal to

A) $P_g = \rho g h_1$.

B) $P_g = \rho g h_2$.

C) $P_g = \rho g h_3$. 
Since

\[ P + \rho g h_3 = P_0 + \rho g h_2. \]

So

\[ P_g = P - P_0 = \rho g (h_2 - h_3) = \rho g h_1. \]

Answer A

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