A U-tube open at both ends to atmospheric pressure $P_0$ is filled with an incompressible fluid of density $\rho$. The cross-sectional area $A$ of the tube is uniform and the total length of the column of fluid is $L$. A piston is used to depress the height of the liquid column on one side by a distance $x_0$, and then is quickly removed. What is the frequency of the ensuing simple harmonic motion? Assume streamline flow and no drag at the walls of the U-tube. (Hint: use conservation of energy).