BERNOULLI'S EQUATION

- The total energy of small amount of
- an incompressible
- non-viscous liquid
- flowing without friction in streamlined flow
- from one point to another
- remains constant throughout the displacement.

We know,

$$E = \frac{1}{2}mv^2 + mgh + m\frac{p}{\rho} = \text{const.} \quad \text{---(1)}$$

or $E/_{mass} = \frac{1}{2}v^2 + gh + \frac{p}{\rho} = \text{const.}$ ---(2)

or $E/_{volume} = \frac{1}{2}\rho v^2 + \rho gh + p = \text{const.}$ ---(3)

Dividing eqn-(2) by g throughout

$$\frac{v^2}{2g} + h + \frac{p}{\rho g} = \text{const.} \qquad \text{---(4)}$$

Analysis of the equation :

$\frac{v^2}{2g}$ = Velocity head

= Dimension is Length.

h = Gravitational head

= Dimension is Length

$\frac{p}{\rho g}$ = Pressure head

= Dimension is Length.