- Continuity:

$$\frac{\partial u}{\partial x}+\frac{\partial v}{\partial y}=0 \longrightarrow \frac{\partial u}{\partial x}=0 \longrightarrow u=\text{const in } x$$

- Momentum:

$$\rho\left[\frac{\partial u}{\partial t}+u\frac{\partial u}{\partial x}+v\frac{\partial u}{\partial y}\right]=-\frac{\partial p}{\partial x}+\mu\left[\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}\right]$$

$$\longrightarrow \frac{d^2u}{dy^2}=\frac{1}{\mu}\frac{\Delta P}{\Delta L} \longrightarrow \frac{du}{dy}=\frac{1}{\mu}\frac{\Delta P}{\Delta L}y+C_1 \longrightarrow u=\frac{1}{2\mu}\frac{\Delta P}{\Delta L}y^2+C_1y+C_2$$

- Boundary conditions:

$$@\, y=0,\ u=0\ ;\ @\, y=H,\ u=V_{bz}=N\pi D\cos\theta$$

$$\longrightarrow u(y)=V_{bz}\left(\frac{y}{H}\right)+\frac{1}{2\mu}\frac{\Delta P}{\Delta L}\left(y^2-Hy\right)$$

- Volumetric output

$$Q=\int_A u\,dA=W\int_0^H u\,dy=AN-C\frac{\Delta P}{\mu}$$

$$A=\frac{1}{2}N\pi DH\cos^2\theta\cdot F_d\ ,\ C=\frac{bH^3\sin\theta\cos\theta}{12L}F_p$$