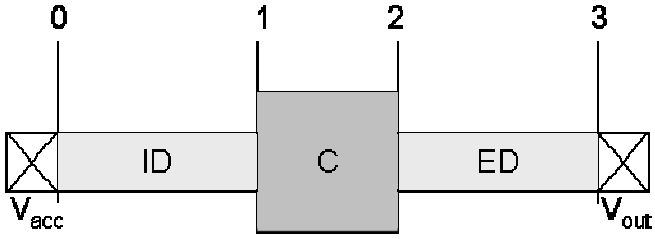

$$\frac{\partial p_0}{\partial t} = \frac{kRT_0}{A_0} \cdot \frac{w_0 - w_1}{L_{ID}}$$

$$\frac{\partial p_1}{\partial t} = \frac{kRT_1}{A_1} \cdot \frac{w_1 - w_2}{L_C}$$

$$\frac{\partial p_2}{\partial t} = \frac{kRT_2}{A_2} \cdot \frac{w_2 - w_3}{L_{ED}}$$

$$\frac{\partial w_1}{\partial t} = -\frac{A_1}{L_{ID}}\left(p_1 - p_0\right) - \frac{\lambda_1}{D_{h1}} \frac{RT_1}{A_1 p_1} \frac{w_1^2}{2}$$

$$\frac{\partial w_3}{\partial t} = -\frac{A_3}{L_{ED}}\left(p_3 - p_2\right) - \frac{\lambda_3}{D_{h3}} \frac{RT_3}{A_3 p_3} \frac{w_3^2}{2}$$

$$J \frac{\partial \omega}{\partial t} = C_s - C_a - C_f$$

$$w = sign\left(p_i - p_f\right) \cdot K_V \sqrt{\rho \left| p_i - p_f \right|}$$