

Mass-flux-dominant Free-body-diagram

$$p_{low}A_{valve} \rightarrow$$

$$\leftarrow p_{low}A_{valve}$$

$$\frac{1}{2}C_D\rho(V - \dot{x})^2A_{valve} \rightarrow$$

$$\leftarrow k_{valve}x$$

$$\rho(V - \dot{x})^2A_{port} \rightarrow$$

