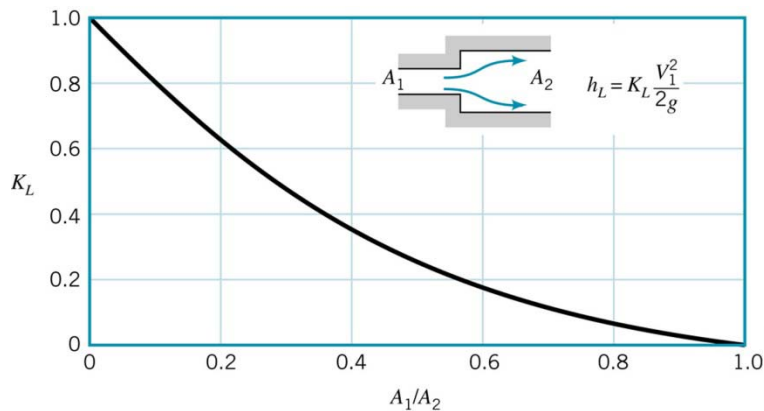
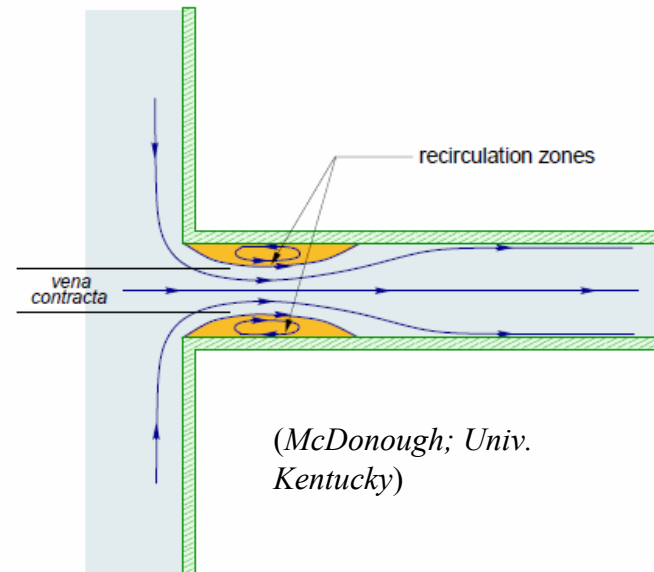
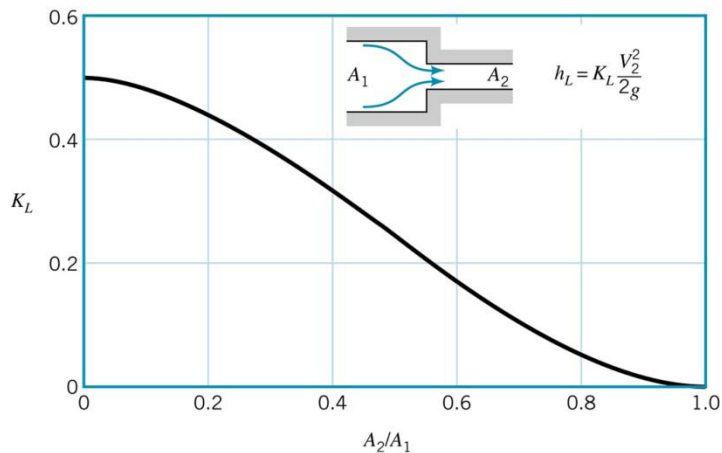


Losses in Pipe Flow

Minor Losses: by sudden change of pipe diameter



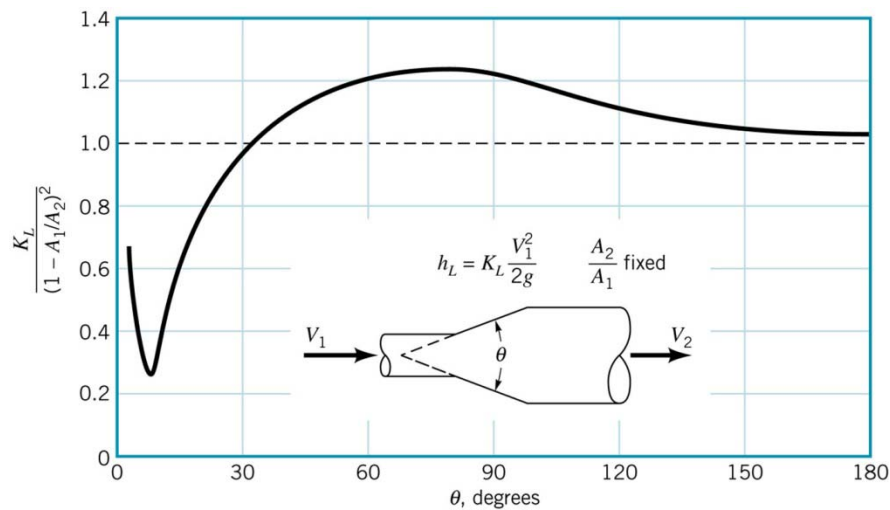
$$K_L = \left(1 - \frac{A_1}{A_2}\right)^2$$



(McDonough; Univ. Kentucky)

Losses in Pipe Flow

Minor Losses: by gradual change of pipe diameter



conical diffuser

conical contraction:
nozzle

$K_L = 0.02$ for $\theta = 30^\circ$; 0.07 for $\theta = 60^\circ$
It is relatively easier to accelerate fluids

Losses in Pipe Flow

Minor Losses: by 90° bend

