

7.48 A 40-cm pipe abruptly expands to a 60-cm size. These pipes are horizontal, and the discharge of water from the smaller size to the larger is $1.0 \text{ m}^3/\text{s}$. What horizontal force is required to hold the transition in place if the pressure in the 40-cm pipe is 70 kPa gage? Also, what is the head loss?