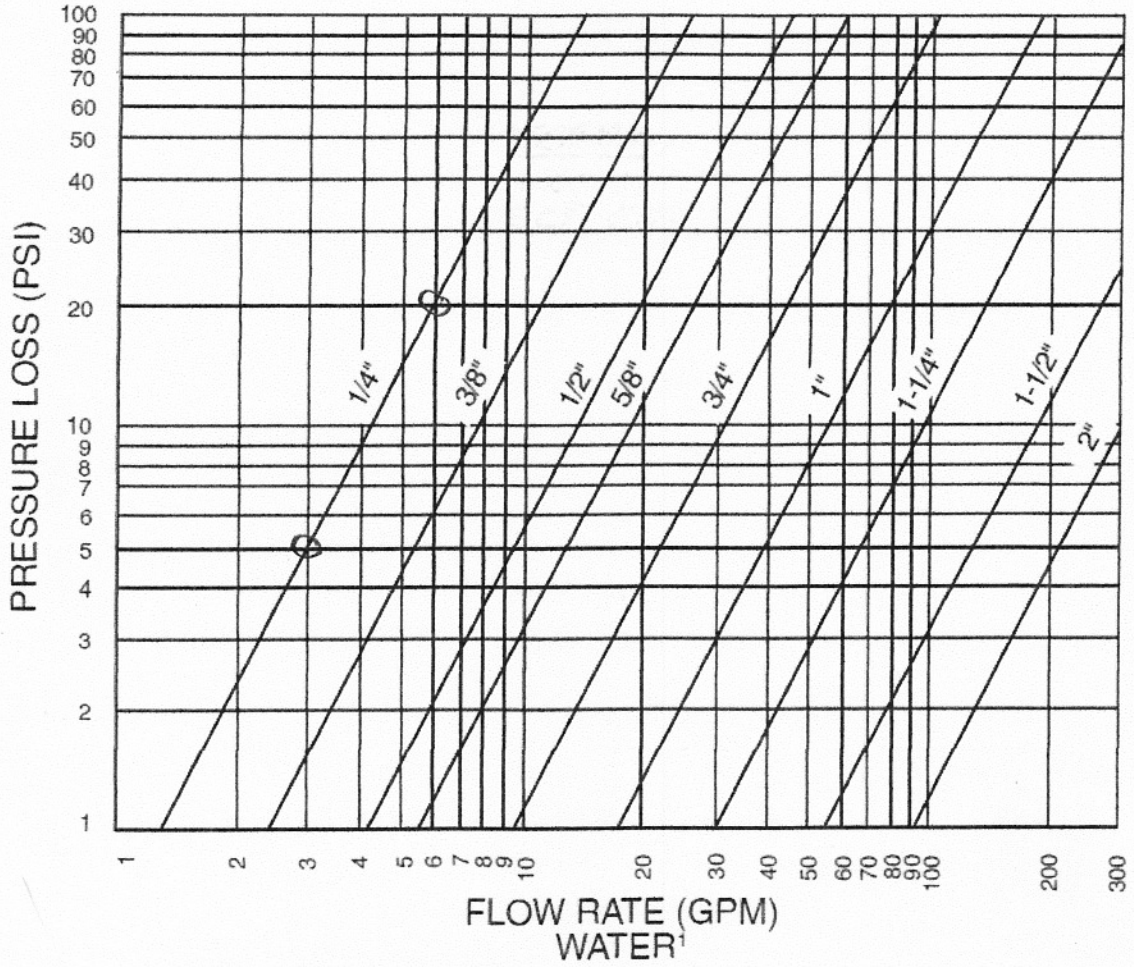
# METHOD OF DETERMINING LOSS COEFFICENT

DETERMINE THE EFFECTIVE LOSS COEFFIENT, K FOR THE 1/4" QUICK DISCONNECT COUPLING CURVE BELOW.




EQ ① ASSUME $\Delta P = \frac{K \rho V^2}{2g}$ FOR THE CURVE

EQ ② THE MASS FLOW RATE $\dot{m} = \rho A V$

$\rho$ - $62.4\ LB/FT^3$

$A$ - AREA $= \frac{\pi}{4}(.25)^2$

$V$ - VELOCITY

$g$ - GRAVITY

FROM ② $V^2 = \dot{m}^2 / \rho^2 A^2$

FROM ① $K = \frac{\Delta P\, 2g}{\rho V^2} = \frac{2g\Delta P}{\rho \dot{m}^2 / \rho^2 A^2}$

$K = \frac{2g\rho^2 A^2 \Delta P}{\rho \dot{m}^2} = 2g\rho A^2 \frac{\Delta P}{\dot{m}^2}$

$$K = \frac{(2)(32.17\ FT/SEC^2)(62.4\ \frac{LB}{FT^3})(\frac{\pi}{4})(.25IN)^2(\frac{1\ FT}{144\ IN^2})^2(\Delta P\ \frac{LB}{IN^2})}{(\frac{1\ MIN}{60\ SEC})^2(\frac{8\ LB}{1\ GAL})^2(\dot{m}\ \frac{GAL}{MIN})^2}$$

$K = 3.77 \frac{\Delta P}{\dot{m}^2}$

AT $\dot{m} = 3$, $\Delta P = 5$

$\dot{m} = 6$, $\Delta P = 20$

$K = 3.77 \frac{5}{3^2} = 2.09$ FOR BOTH $\dot{m} = 3$ & $6$