Pressure drop formula in straight pipe:

Where *delta P* is pressure loss, *f* is the Darcy factor we will find below, *L* is the length of a pipe, *D* is the diameter of the pipe, *rho* is density of fluid, and *V* is velocity.

The fD can be calculated from

Where is roughness of pipe, *D* is inner diameter , and Red can be calculated from below

The Red can be calculated from

Where *rho* is density of fluid, *V* is flow speed, *L* is characteristic length, and is viscosity of fluid.

Pressure drop in elbow and Valves:

Where *K* is coef. we can look up, *V* is velocity of the fluid, is density of fluid

Delta P total is (1) + (2) for a number result. Larger is bad.