

Selection of Hose Diameter

From Flow Rate and Velocity

The Fluid Velocity Nomogram gives the velocity of a liquid as a function of flow rate and inside diameter of the fluid line. The commonly recommended maximum velocities for hydraulic oil systems at 200°F or less are indicated for guidance.

Example: At 10 gpm, what is the minimum size within the recommended velocity range for a hydraulic pressure line?

The dashed line drawn from the 10 gpm mark on the left hand line to the maximum velocity of 20 fps intersects the middle line at .438" (7/16" I. D. hose or tubing). For a hose application, use 1/2" I. D., the nearest common standard size.

This chart is based on the following formulas:

$$v_{\text{fps}} = \frac{.321Q}{\frac{pd^2}{4}}$$

Q = gal per min
d = hose or tube I. D. (inch)

cu. ft./min. = .1337 Q

The cu. ft. per min. value is the actual volume flow rate under flowing conditions. For air, standard cfm of free air = 7.81 actual cfm when the inlet air is at 100 PSIG, 68°F.

