

Saturated Steam Flow in Pipes

by F. Caplan, Oakland, California

THE NOMOGRAPH reproduced at the right permits rapid determination of the pressure drop in steel pipes, and easy selection of pipe sizes. The equation on which it is based,

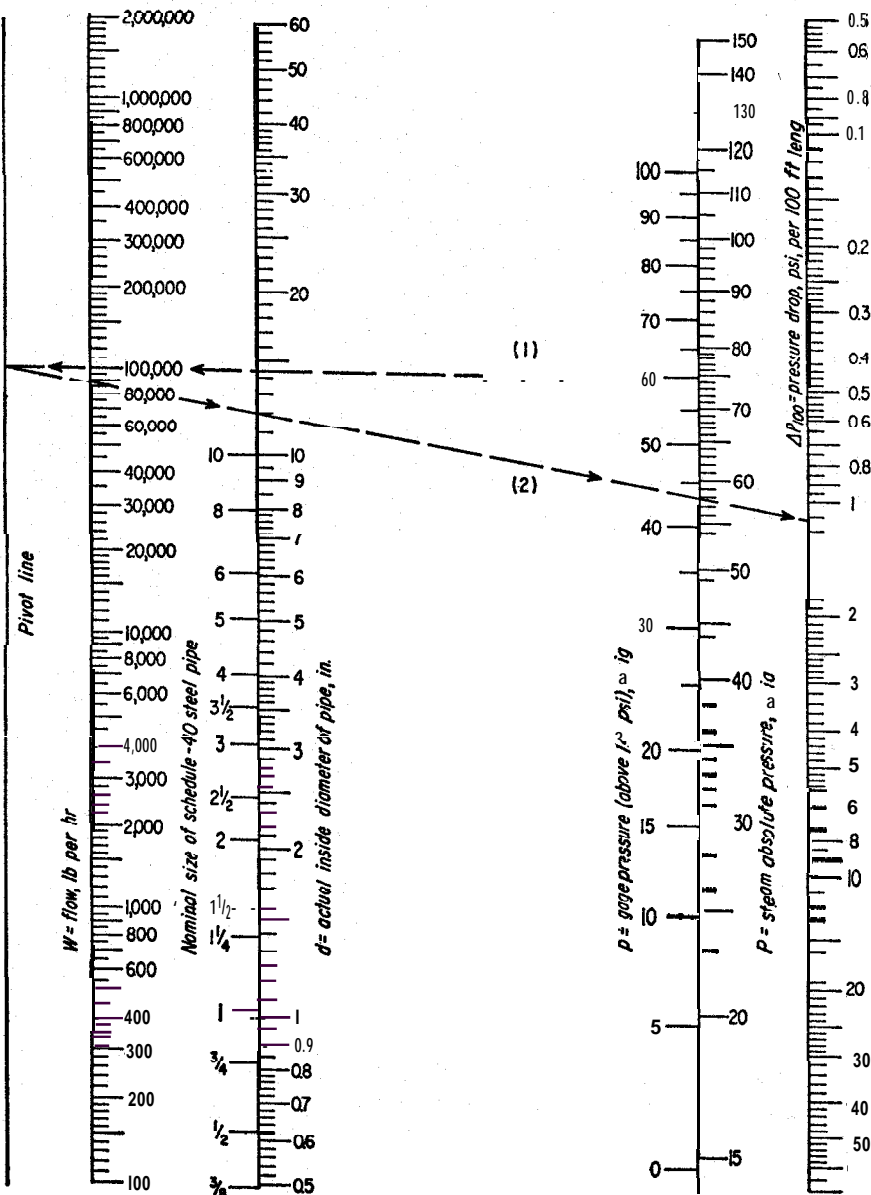
$$\Delta P_{100} = \frac{6.44 \times 10^{-3} W^{1.83}}{d^{4.83} p^{0.913}}$$

is derived from the Darcy equation and the approximation that the friction factor equals $0.1778/R^{0.17}$.

Example: What is the friction loss of 100,000 lb per hr of saturated steam at 60 psig in a 12.0-in. inside diameter pipe? Align $p = 60$ with $W = 100,000$ and mark the intersection (1). Align the intersection with $d = 12$ and read $P = 1.12$ (2).

(Editor's note: Reprints of a chart giving steam velocity in pipes developed by Mr. Caplan and presented in THE TRAP MAGAZINE, No. 5, 1965, are available on request from Armstrong Machine Works.)

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