

Basis Formulas

Formula For:	Word Formula:	Letter Formula:
FLUID PRESSURE In Pounds/Square Inch	Pressure = $\frac{\text{Force (Pounds)}}{\text{Unit Area (Square Inches)}}$	P = F/A or psi = F/A
FLUID FLOW RATE In Gallons/Minute	Flow Rate = $\frac{\text{Volume (Gallons)}}{\text{Unit Time (Minute)}}$	Q = V/T
FLUID POWER In Horsepower	Horsepower = $\frac{\text{Pressure (psi) x Flow (GPM)}}{1714}$	hp = PQ/1714

Fluid Formulas

Formula For:	Word Formula:	Letter Formula:
VELOCITY THROUGH PIPING In Feet/Second Velocity	Velocity = $\frac{.3208 \times \text{Flow Rate through I.D. (GPM)}}{\text{Internal Area (Square Inches)}}$	V = .3208Q/A
COMPRESSIBILITY OF OIL In Additional Required Oil to Reach Pressure	Additional Volume = $\frac{\text{Pressure (psi) x Volume of Oil under Pressure}}{250,000 \text{ (approx.)}}$	V _A = PV/250,000 (approx.)
COMPRESSIBILITY OF A FLUID	Compressibility = $\frac{1}{\text{Bulk Modulus of the Fluid}}$	C(β) = 1/BM
SPECIFIC GRAVITY OF A FLUID	Specific Gravity = $\frac{\text{Weight of One Cubic Foot of Fluid}}{\text{Weight of One Cubic Foot of Water}}$	SG = W/62.4283
VALVE (Cv) FLOW FACTOR	Valve Factor = $\frac{\text{Flow Rate (GPM)} \sqrt{\text{Specific Gravity}}}{\sqrt{\text{Pressure Drop (psi)}}$	Cv = (Q√SG)/(√Δp)
VISCOSITY IN CENTISTOKES	For Viscosities of 32 to 100 Saybolt Universal Seconds: Centistokes = .2253 x SUS - $\left(\frac{194.4}{\text{SUS}}\right)$	CS = .2253 SUS - (194.4/SUS)
	For Viscosities of 100 to 240 Saybolt Universal Seconds: Centistokes = .2193 x SUS - $\left(\frac{134.6}{\text{SUS}}\right)$	CS = .2193 SUS - (134.6/SUS)
	For Viscosities greater than 240 Saybolt Universal Seconds: Centistokes = $\left(\frac{\text{SUS}}{4.635}\right)$	CS = SUS/4.635

Note: Saybolt Universal Seconds can also be abbreviated as SSU.

