



HVAC Formulas: Pressure Measurement

VELOCITY PRESSURE

$$P_v = \left(\frac{V}{4005}\right)^2 \text{ or } V = 4005 \sqrt{P_v}$$

Where V = Air Velocity (FPM)

P_v = Velocity Pressure (in. w.g.)

EQUIVALENT MEASURES OF PRESSURE

1LB. PER SQUARE INCH	= 144lbs. per sq. ft. = 2.036in. Mercury at 32°F = 2.311ft. Water at 70°F = 27.74in. Water at 70°F
1 INCH WATER AT 70°F	= .03609lb. per sq. in. = .5774oz. per sq. in. = 5774oz. per sq. in. = 5.196lbs. per sq. ft.
1 OUNCE PER SQ. IN.	= 1272in. Mercury at 32°F = 1.733in. Water at 70°F
1FT. WATER AT 70°F	= .433lbs. per sq. in. = 62.31lbs. sq. ft.
1 ATMOSPHERE	= 14.696lbs. per sq. in. = 2116.3lbs. per sq. ft. = 33.96ft. Water at 70°F = 29.92in. Mercury at 32°F
1IN. MERCURY AT 32°F	= .491lbs. per sq. in. = 7.86oz. per sq. in. = 1.136ft. Water at 70°F = 13.63in. Water at 70°F

COMPRESSION RATIO

COMPRESSION RATIO	= Absolute Discharge Pressure / Absolute Suction Pressure
ABSOLUTE DISCHARGE PRESSURE	= gauge reading + 15psi
ABSOLUTE SUCTION PRESSURE	= gauge reading + 15psi

REFRIGERANT MASS FLOW RATE

MASS FLOW RATE (POUNDS/MINUTE)	= Piston Displacement X Refrigerant Density = (Cubic Feet/Minute) X (Pounds/Cubic Feet)
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