IMPORTANT COIL SELECTION PERFORMANCE FORMULAS

AREA and VELOCITY

Coil Area (square feet) = Finned Height In. × Finned Length In. ÷ 144

Coil Air Velocity = CFM of Air ÷ Coil Square feet = Feet Per Minute Velocity (FPM)

Selection Note: As you raise the air velocity, a coil will increase in capacity but will have a higher air resistance. Proper selection is the balance of both criteria.

*Please note that when a coil is dehumidifying (moisture forms on the fin pack) do not select coils above 550 feet per minute velocity up to 10 fins per inch and not above 500 feet per minute velocity above 10 fins per inch.

BTUH Capacity and LEAVING AIR TEMPERATURES

SENSIBLE BTUH** = CFM × 1.08 × Air Temperature Difference** = BTUH/HR

> **Heating or Sensible Cooling (without latent load)
> Air Temperature Difference between dry bulb entering and leaving air temperatures.

TOTAL BTUH*** = CFM × 4.5 × ENTH. Of Entering Air - ENTH of Leaving Air

> ***Total BTUH is Sensible and Latent load together. See enthalpy charts for enthalpy at different Fahrenheit temperatures.

CALCULATION OF LEAVING AIR IS A 2 STEP PROCESS:

Sensible BTUH ÷ CFM × 1.08 = Air Temperature Difference

Entering Air Temperature - Air Temperature Difference = Leaving Air Temperature

Total BTUH ÷ CFM × 4.5 = Enthalpy Difference

Entering Enthalpy - Enthalpy Difference = Leaving Enthalpy

See Chart for Temp. Versus Enthalpy figure.

WATER, GLYCOL and FLOW

Fluid BTUH Capacity = GPM × Factor × Fluid Temperature Difference

GPM = BTUH ÷ Fluid Temperature Difference × Factor

Fluid Temperature Difference = BTUH ÷ GPM × Factor

Fluid	Percentage	Factor
Water	100%	511
Ethylene Glycol	20%	478
Ethylene Glycol	30%	465
Ethylene Glycol	40%	444
Ethylene Glycol	50%	417
Propylene Glycol	20%	492
Propylene Glycol	30%	483
Propylene Glycol	40%	457
Propylene Glycol	50%	438

WATER VELOCITY FEET PER SECOND (FPS)

WATER VELOCITY FPS* = GPM × Factor ÷ Number of Tubes Fed

Tube Diameter	Factor
5/8 “ OD	1.085
1/2” OD	1.704
3/8” OD	3.050

**As Water Velocity increases, the capacity of a coil increases, but so does the water resistance. It is a balance between the desired capacity and the resultant

resistance based on coil selection. To obtain reasonable velocity that equates to quality heat transfer and moderate resistance, circuitry and resultant water velocity should be selected between 1 and 8 feet per second with the 2 to 6 feet per second area being preferred. Under 1 foot per second can cause laminar flow and over 8 feet per second can cause erosion of tubes based on fast velocity through tubes and around bends.