# McQuay® Water Cooling & Evaporator Coils

## Types HI-F5 & E-F5

ARI PERFORMANCE CERTIFIED ARI Standard 410

McQuay® International

# HI-F5 & E-F5 water cooling & evaporator coils

## SelectTOOLS™ for Contractor Coils

McQuay offers a wide variety of standard fin spacings, row and circuiting combinations. For optimum coil selection, McQuay's SelectTOOLS™ for Contractor Coils selection program makes it easy to select the most economical standard or special application coil to meet your job requirements.

Contact your local McQuay representative for a coil selection that meets the most exacting specification.

## ARI Certification

McQuay® water cooling and evaporator coils are certified in accordance with the forced circulation air cooling and air heating coil certification program, which is based on ARI Standard 410.

Note: Special application coils may be outside the scope of ARI Standard 410.

## Contents



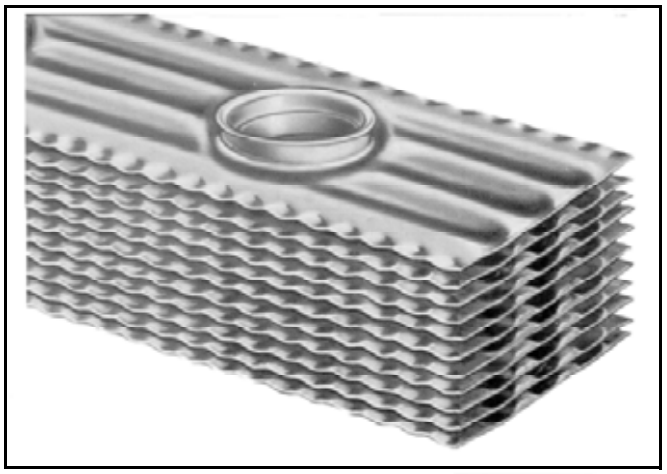

"McQuay" and "HI-F" are registered trademarks of McQuay International, Minneapolis, MN.

The McQuay HI-F fin surface is covered by U.S. Patent No. 3,645,330.

Copyright ©2006 McQuay International. All rights reserved throughout the world.

Bulletin illustrations cover the general appearance of McQuay International products at time of publication and we reserve the right to make changes in design and construction at any time without notice.

# A pioneer in corrugated fin development



## HI-F Means High Efficiency

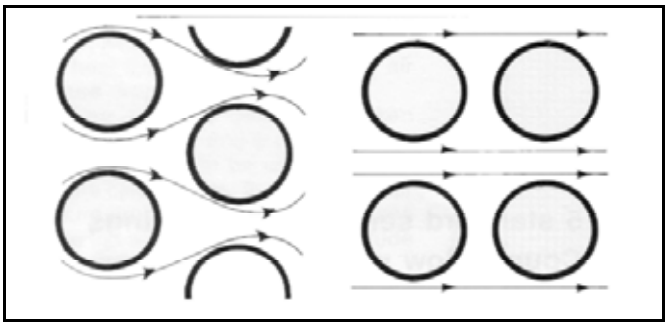
A principal factor governing fin heat transfer efficiency is the boundary layer film of air adhering to any fin surface. This boundary layer insulates the fin, severely reducing the rate of heat exchange.

The advanced rippled-corrugated HI-F design creates a state of continuous turbulence which effectively reduces the boundary layer formation. The exclusive rippled edge instantly deflects the incoming air to create initial turbulence. A succession of corrugations across the fin depth, in conjunction with the staggered tubes, increases the turbulating effect and eliminates the "dead spots" behind the tubes. In this manner, the HI-F design establishes a high standard in heat transfer efficiency yielding sharply increased performance. The rippled fin edge also strengthens the fin edge and provides a pleasing overall appearance.

## E-F Means Energy Efficient

The term "energy efficient," which is used to describe how well a system utilizes energy, has become a common expression in the HVAC industry.

With costs of energy rising, the need for cutting operating expenses is apparent. Lowering the air pressure drop across the face of the coil will reduce the fan brake horsepower requirement and fan motor electrical demand. The need to cut operating energy expenses is met by the E-F fin surface. The smoother fin design of the E-F surface results in lower operating costs over the life of the equipment.



## Staggered Tube Design For High Performance

The more moving air in contact with the tubes in the coil, the more performance obtained from the total available surface. The staggered tube design exposes the tubes to more moving air than the in-line design. The geometry of the staggered tube design also allows the rows to be spaced closer together. This results in a more compact coil providing higher capacities.

# Nomenclature

**5W S - 10 06 C - 18 x 45**

**COIL TYPE**
Water: 5M, 5W
Evaporator: 5E

**CIRCUITING**

**Water:**

| | | | |
|---|---|---|---|
| H | = | 1/2 | Serpentine |
| L | = | 3/4 | Serpentine |
| S | = | 1 | Serpentine |
| M | = | 1-1/2 | Serpentine |
| D | = | 2 | Serpentine |

**Evaporator:**

| | | |
|---|---|---|
| N | = | Normal |
| F | = | Face Control |
| R | = | Row Control |
| J | = | Interlaced |
| K | = | Interlaced Face Control |

**FINNED LENGTH (INCHES)**

**FIN HEIGHT (INCHES)**

**FIN DESIGN**
C = HI-F5
B = E-F5

**ROWS DEEP ( 02, 03, 04, 05, 06, 08, 10, 12)**

**FINS PER INCH**
**(06, 07, 08, 09, 10, 11, 12, 13, 14)**

# Standard Availability Chart

| COIL TYPE | | | CHILLED WATER | | | | | | | EVAPORATOR | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| COIL MODEL | | | 5MH | 5MS | 5WH | 5WL | 5WS | 5WM | 5WD | 5EN | 5EF | 5ER | 5EJ | 5EK |
| SERPENTINE CIRCUIT | | | 1/2 | 1 | 1/2 | 3/4 | 1 | 1-1/2 | 2 | Normal | Face | Row | Interlaced | |
| ROWS | | | 2 | | 3,4,5,6, 8,10,12 | | | 4,5,6 | 4,6,8 | 2,3,4,5 6,8,10 | | 6 | 3,4,6,8 | 4,8 |
| | | | | | | | | 8,10,12 | 10,12 | | | | | |
| CONNECTION LOCATION | | | Same End Except 5WS 3,5 Row, 5WD 6,10 Row | | | | | | | Same End | | | | |
| FIN HEIGHT 3" INCREMENT | | | 12-54 | | | | | | | 12-54 | | | 15-54 | |
| FINNED LENGTH | | | 12-141 | | | | | | | 12-141 | | | | |
| FINS | FIN TYPE | HI-F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | E-F | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | ALUMINUM | .0075 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .0095 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | COPPER | .006 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .0075 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .0095 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | SPACING (FPI) | | 6,7,8,9,10,11,12,13,14 | | | | | | | 6,7,8,9,10,11,12,13,14 | | | | |
| TUBING | DIAMETER | | 5/8 | | | | | | | 5/8 | | | | |
| | FACE C/C | | 1.5 | | | | | | | 1.5 | | | | |
| | COPPER | .020* | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .025 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .035 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | .049 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| HEADERS | STANDARD MAT'L** | | Copper Tubing | | | | | | | Copper Tubing | | | | |
| MAXIMUM STD. OPERATING LIMITS | | P | 250 psig | | | | | | | 250 psig | | | | |
| | | T | 300°F | | | | | | | 300° F | | | | |

● Feature Available
* .020 is a nominal tube thickness
** Optional header materials are available, consult your representative

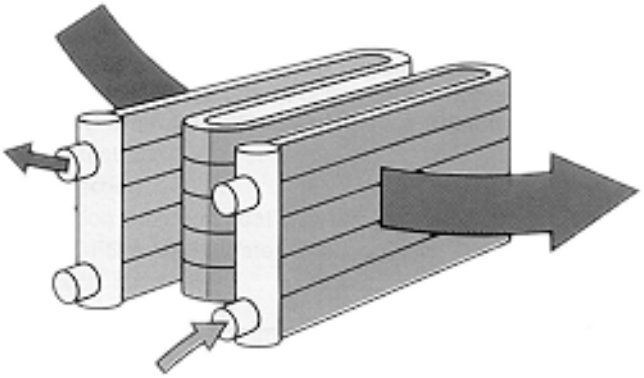
# Flexibility

Along with the standard offerings, optional materials and special configurations are provided to meet many different needs. Extra long finned lengths, intermediate tube supports, along with a wide variety of tube wall and fin thicknesses are available. Casings can be constructed of heavy steel, aluminum, stainless steel or copper. Optional connection materials such as steel, Monel, red brass or copper (sweat) are offered along with butt-weld or flange type connections. Coil coatings are phenolic or Electro Fin.
These are just a few of the options and specials that can be provided. Consult your local representative for your special coil needs.

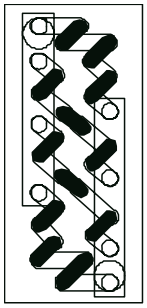
***Note: Special application coils may be outside the scope of ARI standard 410.**

# Circuiting arrangements

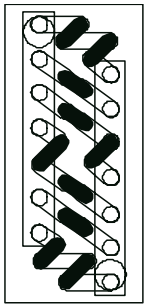
## Chilled water circuitings



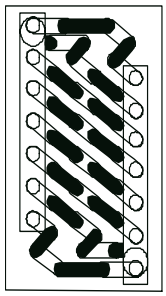
- 5 standard serpentine circuitings
- Counterflow water circuits
- Unique or universal hand of connection



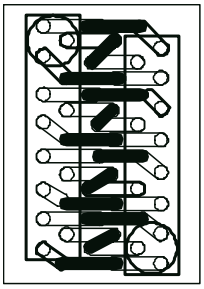
**5WH**
**1/2 Serpentine (H)**



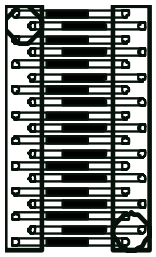
**5WL**
**3/4 Serpentine (L)**



**5WS**
**1 (single) Serpentine (S)**



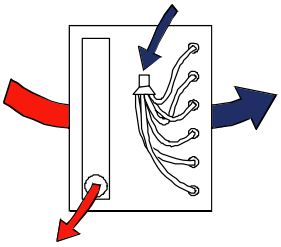
**5WM**
**1-1/2 Serpentine (M)**



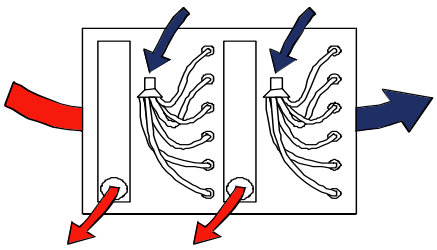
**5WD**
**2 (double) Serpentine (D)**

## Evaporator coil circuitings

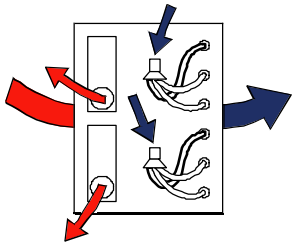
NOTE: See page 24 for exact number and location of coil connections.



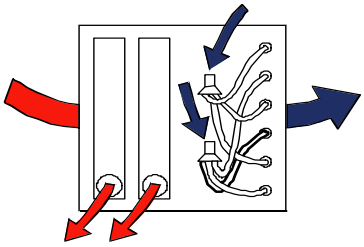
**5EN**
**NORMAL**



**5ER**
**ROW CONTROL**

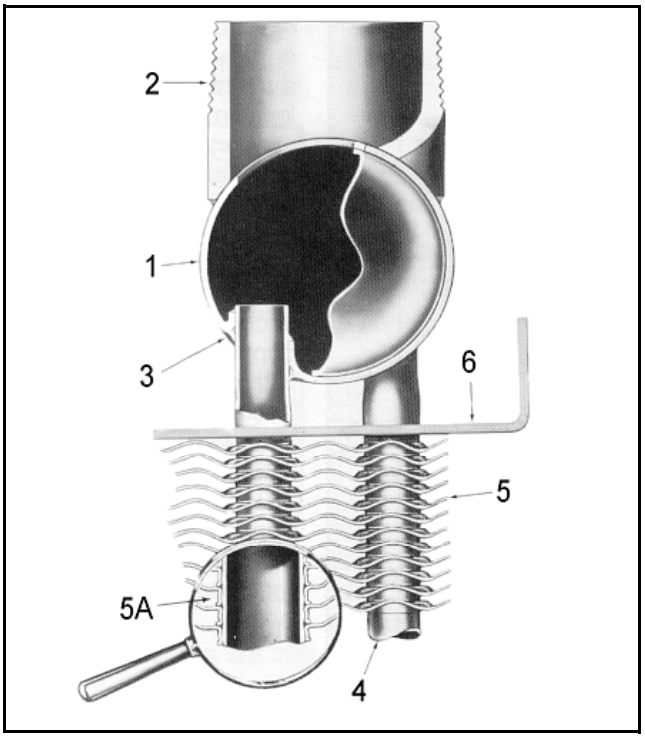


**5EF**
**FACE CONTROL**



**5EJ, 5EK**
**INTERLACED**
**(5EJ SHOWN)**

# Design features




## General

**VENTS & DRAINS -** Furnished on all water coils.

**TESTS -** Complete coil tested leak free under warm water containing special wetting agent at 315 psig air pressure for 5W, 5M and 5E coils.

**OPERATING CONDITIONS -** Standard coils are suitable for use up to 250 psig and temperatures up to 300° F for 5W, 5M and 5E coils. Special high pressure construction is available for 5W coils (consult factory).

## 5E, 5M, 5W coils

1. **HEADERS -** Extra-heavy seamless copper tubing. Tube holes are intruded to provide the maximum brazing surface for added strength. Header end caps are heavy-gauge, die-formed copper. Cupro-nickel headers and Monel end caps are available for special applications.

2. **CONNECTIONS -** Unique hand or universal connections can be provided. Connection type must be specified. Water Coil Connections: Steel male pipe supply and return connections. Other materials available on request (red brass connections recommended on type 5W coils when used with non-ferrous piping). Evaporator Coil Connections: Male sweat type. Liquid connections are brass and suction connections are copper.

3. **BRAZING -** All joints are brazed with copper brazing alloys.

4. **PRIMARY SURFACE -** Round seamless copper tubes on 1-1/2" centers. Cupro-nickel tubes are recommended for applications where high acid or sand content tends to be corrosive or erosive.

5. **SECONDARY SURFACE -** HI-F or E-F rippled aluminum or copper die-formed plate type fins.

   **5A. FIN COLLARS -** Full drawn to completely cover the tubes for maximum heat transfer and to provide accurate control of fin spacing.

6. **CASING -** Die-formed, heavy-gauge, continuous galvanized steel with reinforced mounting flanges. (Other materials available on request.) Intermediate tube sheets position the core assembly to help prevent damage in shipment.

# Coil Selection

## General Considerations

The cooling process should always be plotted on a psychrometric chart to be sure that desired psychrometric changes are feasible.

When selecting a coil, it should be remembered that if the required leaving wet bulb temperature is attained, the total load is satisfied and vice versa. Also, when the required leaving dry bulb temperature is met, the sensible load requirement is satisfied.

A coil must meet both the total and sensible load requirement in order to achieve the conditions desired in the space to be cooled. Normally, the total load capacity is checked first. However, the leaving dry bulb should always be checked. When the sensible to total load ratio (S/T ratio) is low, the coil selection is normally controlled by the total load even though the sensible cooling capacity may exceed the requirement. In some cases, if the leaving dry bulb temperature is too low, reheat may be required.

When the S/T ratio is high, the coil selection is normally controlled by the sensible cooling even though the total capacity may exceed that required. If the total capacity far exceeds the requirement, a recheck on the system should be made to be sure sufficient system capacity is available.

Normal cooling coil face velocities range from 300 to 700 FPM. For most applications, 500 to 600 FPM is recommended. See the individual air pressure drop curves (pages 11 & 14). to determine under what conditions moisture carryover might be a consideration.

Water velocity in the tubes of approximately 3 to 6 FPS is desirable to attain high heat transfer rates with a reasonable water pressure drop. Water velocity above 8 FPS may cause erosion in copper tube coils.

Cooling coils should not normally exceed 54" fin height as the condensate draining from the top portion of the coil tends to load up on the lower portion of the coil and a significant reduction in airflow and performance may result. Where the fin height exceeds 54", we recommend two or more coils banked one above the other and installed in accordance with the recommendations shown below.

Cooling coils are normally selected to have a finned length of three to four times the fin height for economy. Coils of several different face dimensions are usually available to meet the required face area.

## HI-F5 versus E-F5

Two different corrugated coil surfaces are offered to provide the most economical coil for a given application.

| Type | Tube Dia. | Fin Type | Application |
|---|---|---|---|
| HI-F5 | 5/8” | HI-F Hi-Efficiency | Provides highest heat transfer rate for a given amount of surface. |
| E-F5 | 5/8” | E-F Energy Efficient | Smoother fin corrugation than the HI-F5 results in a lower air pressure drop and lower fan BHP requirements. The cost of additional surface can be amortized by the KW savings. |

# Application recommendations, water cooling coils

1. Piping should be in accordance with accepted industry standards.
2. When drainable coils are desired, tubes should be installed in a horizontal position using a spirit level. If the tubes cannot be installed level, special drain headers are available on request.
3. Coils are unique for either right- or left-hand airflow. The coil hand must be specified. CONNECT THE WATER SUPPLY TO THE CONNECTION ON THE AIR LEAVING SIDE AND THE WATER RETURN TO THE CONNECTION ON THE AIR ENTERING SIDE.
4. When cooling coils are banked two or three high, a drain gutter should be installed on the air leaving side of each coil to collect the condensate. On high latent installations, the condensate draining from top coils would load the lower coils with condensate and a reduction in airflow and performance may result. All individually installed water cooling coils and the bottom coils of all cooling coil banks should be mounted in drain pans extending at least 10 inches from the leaving air edge of the coil.
5. When fresh air and return air are to be cooled by a water coil, care should be exercised in the design of the ductwork to provide thorough mixing before the air enters the coil. If large quantities of fresh air below 40°F are introduced into the system, steam distributing coils should be installed in the fresh air duct or mixing plenum as preheaters to raise the air temperature to a minimum of 40°F. This holds true unless the water coil is drained and filled with antifreeze. Even though the coil is drained, there may be enough water remaining to cause freeze damage. The coil should be drained and flushed with antifreeze. On any system that has fresh air introduced in the winter season, all possible precaution must be taken to prevent freezing.
6. Control of water cooling coils can be accomplished by two-position control valves, modulating valves, three-way valves, face and bypass dampers, or a combination of these controls. Follow the recommendations of the control manufacturer regarding types, sizing and locations.
7. The pipe size for the system must be selected on the basis of the head (pressure) available from the circulating pump. It is recommended that the velocity should not generally exceed 8 feet per second and that the pressure drop should be approximately 3 feet of water per 100 feet of pipe.

**Table 1: Standard water coil circulating (number of tubes fed) - for calculating water velocity for types 5W and 5M coils**

| TYPE | ROWS | FIN HEIGHT (INCHES) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 | 51 | 54 |
| 5MS | 2 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
| 5MH | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 26 | 14 | 15 | 16 | 17 | 18 |
| 5WH | 3, 4, 5, 6, 8, 10, 12 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 5WL | 3, 4, 5, 6, 8, 10, 12 | 6 | 7 | 9 | 10 | 12 | 13 | 15 | 16 | 18 | 19 | 21 | 22 | 24 | 25 | 27 |
| 5WS | 3, 4, 5, 6, 8, 10, 12 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 |
| 5WM | 4, 5, 6, 8, 10, 12 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | 45 | 48 | 51 | 54 |
| 5WD | 4, 6, 8, 10, 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 | 52 | 56 | 60 | 64 | 68 | 72 |

**Table 2: Coil sizes face area in square feet**

| FIN HEIGHT | FINNED LENGTH – FL (INCHES) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 12 | 15 | 18 | 21 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 |
| 12 | 1.00 | 1.25 | 1.60 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.0 | 4.5 | 5.0 | 5.5 |
| 15 | | 1.56 | 1.87 | 2.19 | 2.50 | 3.12 | 3.75 | 4.87 | 5.0 | 5.6 | 6.2 | 6.9 |
| 18 | | | 2.25 | 2.62 | 3.00 | 3.75 | 4.50 | 5.25 | 6.0 | 6.7 | 7.5 | 8.2 |
| 21 | | | | 3.06 | 3.50 | 4.37 | 5.25 | 6.12 | 7.0 | 7.9 | 8.7 | 9.6 |
| 24 | | | | | 4.00 | 5.00 | 6.00 | 7.00 | 8.0 | 9.0 | 10.0 | 11.0 |
| 27 | | | | | | 5.62 | 6.75 | 7.87 | 9.0 | 10.1 | 11.2 | 12.4 |
| 30 | | | | | | | 7.50 | 8.75 | 10.0 | 11.2 | 12.5 | 13.7 |
| 33 | | | | | | | 8.25 | 9.62 | 11.0 | 12.4 | 13.7 | 15.1 |
| 36 | | | | | | | 9.00 | 10.50 | 12.0 | 13.5 | 15.1 | 16.5 |
| 39 | | | | | | | | 11.37 | 13.0 | 14.6 | 16.2 | 17.9 |
| 42 | | | | | | | | 12.25 | 14.0 | 15.7 | 17.5 | 19.2 |
| 45 | | | | | | | | | 15.0 | 16.8 | 18.7 | 20.6 |
| 48 | | | | | | | | | 16.0 | 18.0 | 20.0 | 22.0 |
| 51 | | | | | | | | | 17.0 | 19.1 | 21.2 | 23.3 |
| 54 | | | | | | | | | | 20.2 | 22.4 | 24.8 |

| FIN HEIGHT | FINNED LENGTH – FL (INCHES) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 72 | 78 | 84 | 90 | 96 | 102 | 108 | 114 | 120 | 129 | 135 | 141 |
| 12 | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 | 10.7 | 11.2 | 11.7 |
| 15 | 7.5 | 8.1 | 8.7 | 9.4 | 10.0 | 10.6 | 11.2 | 11.9 | 12.5 | 13.4 | 14.0 | 14.7 |
| 18 | 9.0 | 9.7 | 10.5 | 11.2 | 12.0 | 12.7 | 13.5 | 14.2 | 15.0 | 16.1 | 16.9 | 17.6 |
| 21 | 10.5 | 11.4 | 12.2 | 13.1 | 14.0 | 14.9 | 15.7 | 16.6 | 17.5 | 18.8 | 19.7 | 20.5 |
| 24 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20.0 | 21.5 | 22.5 | 23.5 |
| 27 | 13.5 | 14.6 | 15.7 | 16.9 | 18.0 | 19.1 | 20.2 | 21.4 | 22.5 | 24.1 | 25.3 | 26.4 |
| 30 | 15.0 | 16.2 | 17.5 | 18.7 | 20.0 | 21.2 | 22.5 | 23.7 | 25.0 | 26.8 | 28.0 | 29.5 |
| 33 | 16.5 | 17.9 | 19.2 | 20.6 | 22.0 | 23.4 | 24.7 | 26.1 | 27.5 | 29.6 | 30.9 | 32.3 |
| 36 | 18.0 | 19.5 | 21.0 | 22.5 | 24.0 | 25.5 | 27.0 | 28.5 | 30.0 | 32.2 | 33.8 | 35.2 |
| 39 | 19.5 | 20.1 | 22.7 | 24.4 | 26.0 | 26.7 | 29.2 | 30.9 | 32.5 | 34.9 | 36.5 | 38.2 |
| 42 | 21.0 | 22.7 | 24.5 | 26.2 | 28.0 | 29.7 | 31.5 | 33.2 | 35.0 | 37.6 | 39.4 | 41.0 |
| 45 | 22.5 | 24.4 | 26.2 | 28.1 | 30.0 | 31.9 | 33.7 | 35.6 | 37.5 | 40.3 | 42.2 | 44.1 |
| 48 | 24.0 | 26.0 | 28.0 | 30.0 | 32.0 | 34.0 | 36.0 | 38.0 | 40.0 | 43.0 | 45.0 | 47.0 |
| 51 | 25.5 | 27.6 | 29.7 | 31.8 | 34.0 | 36.1 | 38.2 | 40.4 | 42.5 | 45.7 | 47.8 | 49.9 |
| 54 | 27.0 | 29.2 | 31.4 | 33.8 | 36.0 | 38.2 | 40.4 | 42.8 | 45.0 | 48.2 | 50.6 | 52.8 |

**NOTE:** In addition to the standard finned lengths listed above, any required finned length can be supplied.

# HI-F5 & E-F5 water cooling coils

HI-F5 and E-F5 water cooling coils are designed for use with chilled or well water on comfort cooling, process, dehumidifying and special applications. All water cooling coils have vents and drains to aid drainability.

**5W Water Cooling Coils** are designed for general purpose cooling. All 5W coils have heavy-gauge seamless drawn copper tube headers with carbon steel connections. This proven header design can lengthen coil life by providing necessary header flexibility to compensate for normal expansion and contraction during operation. Intermediate drain headers are available for coils that cannot be installed level.

## General Formulas

**TOTAL BTUH:**

*Total BTUH = 4.5 X SCFM X (Total Heat Ent. Air - Total Heat Lvg. Air)*

Where: 4 .5 = Density Std. Air x Min. / hr.
Density Std. Air = .075 lbs / cu. ft.
Minutes/hr. = 60

**TOTAL BTUH:**

*Total BTUH = 500 x GPM x (Lvg. Water Temp. - Ent. Water Temp.)*

Where: 500 = lbs. / gal. x min. / hr. x Specific heat water
Lbs. / gal. = 8.33
Min. / hr. = 60
Specific Heat Water = 1

**SENSIBLE BTUH:**

*Sensible BTUH = 1.09 x SCFM x (Ent. Air DB -Lvg. Air DB)*

Where: 1.09 = (Specific heat of air at 70° F) x (Min/hr.)
x Density Std. Air
Specific heat of air = .242 at 70° F
Min./hr. = 60
Density Std. Air = .075 lbs. / cu ft.

**WATER VELOCITY:**

$$\text{5/8" Tubes: Water Velocity FPS} = \frac{1.07 \times GPM}{\text{No. of Tubes Fed}}$$

**FACE AREA:** $$F.A. = \frac{SCFM}{\text{Face Velocity (FPM)}}$$

**FACE VELOCITY:** $$F.V. = \frac{SCFM}{\text{Face Area (Sq. Ft.)}}$$

**SENSIBLE TOTAL RATIO:** $$S/T\ Ratio. = \frac{\text{Sensible BTUH}}{\text{Total BTUH}}$$

**MBH PER SQUARE FOOT OF FACE AREA:**

$$MBH / Sq.\ Ft. = \frac{\text{Total BTUH}}{\text{Face Area (Sq. Ft. ) x 1000}}$$

## Example water cooling coil rating

The capacity data tables in this catalog rate a given coil at the ARI conditions. For example, rate the following coil:

Coil model ..... 5WS0804C
Coil size..... 24x48
Entering dry bulb ..... 80°F
Entering wet bulb ..... 67°F
Entering water temperature..... 45°F
Airflow .....500 feet per minute
Water velocity..... 4 feet per second

On page 9, find the table for 4-row coils, 24 x 48 inches. Follow the 5WS, 1 Serpentine column down until you reach the 08 fpi (8 fins per inch) row. This coil will provide 138.52 MBH with 57.5°F leaving dry bulb temperature and 56.0°F leaving wet bulb temperature.

Next, calculate the coil GPM:

$$\frac{FPS \times No.\ Circuits}{1.07 \quad (5/8\ tubes)} = GPM$$

$$\frac{4 \times 16}{1.07} = 60\ GPM$$

Where: FPS = Feet per second water velocity
Circuits = Number of tubes fed with 1.5" tube centers. 24" high coil /1.5" = 16 tubes; from page 7, table 1. single serpentine feeds all 16 tubes.)

Find the water and air pressure drops by following the examples on pages 15 and 11 respectively. For our example, coil rating the water pressure drop equals 5.4 feet and the air pressure drop equals 0.68 inches w.g.

*To select a water cooling coil to meet specific performance requirements, contact your local representative.*

# HI-F5 5/8 water cooling ari coil capacity data

**80° F/67° F Entering Air Temperature** **4 Feet Per Second Water Velocity**
**45° F Entering Water Temperature** **500 FPM Air Velocity**

**Table 3.**

| FPI | 2-ROW - 24" X 48" FACE AREA | | | | 3-ROW - 24" X 48" FACE AREA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5MH 1/2 SERPENTINE | | 5MS 1 SERPENTINE | | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB |
| 6 | 69.09 | 67.9 / 61.7 | 72.58 | 67.6 / 61.5 | 95.09 | 63.6 / 59.7 | 99.12 | 63.3 / 59.3 | 101.38 | 63.1 / 59.1 |
| 7 | 74.89 | 66.7 / 61.3 | 79.35 | 66.3 / 60.9 | 101.88 | 62.4 / 59.1 | 106.34 | 62.0 / 58.7 | 108.99 | 61.7 / 58.5 |
| 8 | 79.99 | 65.6 / 60.9 | 85.10 | 65.2 / 60.5 | 107.94 | 61.3 / 58.6 | 113.20 | 60.8 / 58.2 | 115.53 | 60.6 / 58.0 |
| 9 | 84.75 | 64.6 / 60.5 | 89.95 | 64.2 / 60.1 | 113.36 | 60.3 / 58.1 | 118.86 | 59.8 / 57.7 | 121.80 | 59.6 / 57.4 |
| 10 | 88.84 | 63.8 / 60.2 | 94.74 | 63.2 / 59.7 | 118.23 | 59.5 / 57.7 | 123.96 | 59.0 / 57.2 | 127.01 | 58.7 / 57.0 |
| 11 | 92.58 | 63.0 / 59.9 | 98.87 | 62.4 / 59.3 | 122.62 | 58.8 / 57.3 | 128.58 | 58.3 / 56.8 | 131.73 | 58.0 / 56.6 |
| 12 | 96.01 | 62.3 / 59.6 | 102.68 | 61.7 / 59.0 | 126.60 | 58.2 / 57.0 | 132.76 | 57.6 / 56.5 | 136.01 | 57.3 / 56.2 |
| 13 | 98.83 | 61.8 / 59.4 | 106.20 | 61.0 / 58.7 | 130.21 | 57.7 / 56.7 | 136.57 | 57.1 / 56.1 | 139.92 | 56.8 / 55.8 |
| 14 | 101.77 | 61.2 / 59.1 | 109.44 | 60.5 / 58.5 | 133.50 | 57.2 / 56.4 | 140.05 | 56.6 / 55.8 | 143.48 | 56.3 / 55.5 |

| FPI | 4-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 114.60 | 60.7 / 58.0 | 120.03 | 60.2 / 57.6 | 123.16 | 59.9 / 57.3 | 126.17 | 59.6 / 57.0 | 127.67 | 59.5 / 56.9 |
| 7 | 122.00 | 59.5 / 57.4 | 128.54 | 58.9 / 56.8 | 131.46 | 58.6 / 56.6 | 134.82 | 58.3 / 56.3 | 136.50 | 58.1 / 56.1 |
| 8 | 128.48 | 58.4 / 56.8 | 135.37 | 57.8 / 56.2 | 138.52 | 57.5 / 56.0 | 142.28 | 57.1 / 55.6 | 144.11 | 57.0 / 55.5 |
| 9 | 134.19 | 57.6 / 56.3 | 141.40 | 56.9 / 55.7 | 145.22 | 56.5 / 55.4 | 148.83 | 56.2 / 55.0 | 150.52 | 56.0 / 54.9 |
| 10 | 139.25 | 56.8 / 55.9 | 147.02 | 56.1 / 55.2 | 150.55 | 55.8 / 54.9 | 154.78 | 55.4 / 54.5 | 156.52 | 55.2 / 54.3 |
| 11 | 144.09 | 56.2 / 55.5 | 151.34 | 55.5 / 54.8 | 155.61 | 55.1 / 54.4 | 159.79 | 54.7 / 54.0 | 161.91 | 54.5 / 53.8 |
| 12 | 147.84 | 55.7 / 55.1 | 155.82 | 54.9 / 54.4 | 160.01 | 54.5 / 54.0 | 164.27 | 54.1 / 53.6 | 166.43 | 53.9 / 53.4 |
| 13 | 151.37 | 55.2 / 54.8 | 159.68 | 54.4 / 54.0 | 163.95 | 54.0 / 53.6 | 168.30 | 53.6 / 53.2 | 170.49 | 53.4 / 53.0 |
| 14 | 154.69 | 54.8 / 54.5 | 163.15 | 54.0 / 53.7 | 167.51 | 53.6 / 53.3 | 171.93 | 53.2 / 52.9 | 174.15 | 53.0 / 52.7 |

| FPI | 5-ROW - 24" X 48" FACE AREA | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 130.50 | 58.4 / 56.7 | 137.28 | 57.8 / 56.1 | 141.19 | 57.5 / 55.7 | 144.98 | 57.1 / 55.4 |
| 7 | 138.17 | 57.3 / 56.0 | 146.35 | 56.5 / 55.3 | 149.71 | 56.2 / 55.0 | 153.92 | 55.8 / 54.6 |
| 8 | 144.95 | 56.3 / 55.4 | 152.90 | 55.6 / 54.7 | 157.48 | 55.1 / 54.2 | 161.50 | 54.8 / 53.9 |
| 9 | 150.54 | 55.5 / 54.9 | 158.98 | 54.7 / 54.1 | 163.38 | 54.3 / 53.7 | 167.98 | 53.9 / 53.3 |
| 10 | 155.77 | 54.9 / 54.4 | 164.64 | 54.0 / 53.6 | 169.25 | 53.6 / 53.2 | 174.06 | 53.1 / 52.7 |
| 11 | 160.05 | 54.4 / 54.0 | 169.30 | 53.5 / 53.1 | 174.04 | 53.0 / 52.7 | 178.80 | 52.6 / 52.2 |
| 12 | 164.01 | 53.9 / 53.6 | 173.48 | 53.0 / 52.8 | 178.29 | 52.5 / 52.3 | 183.08 | 52.1 / 51.8 |
| 13 | 167.54 | 53.5 / 53.3 | 177.19 | 52.6 / 52.4 | 182.06 | 52.1 / 51.9 | 186.87 | 51.7 / 51.5 |
| 14 | 170.71 | 53.2 / 53.0 | 180.51 | 52.3 / 52.1 | 185.41 | 51.8 / 51.6 | 190.21 | 51.3 / 51.1 |

| FPI | 6-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 143.87 | 56.7 / 55.5 | 152.24 | 55.9 / 54.7 | 155.85 | 55.6 / 54.4 | 160.68 | 55.1 / 54.0 | 162.87 | 54.9 / 53.7 |
| 7 | 151.49 | 55.6 / 54.8 | 160.61 | 54.7 / 54.0 | 164.77 | 54.3 / 53.6 | 169.22 | 53.9 / 53.2 | 171.92 | 53.7 / 52.9 |
| 8 | 158.05 | 54.7 / 54.2 | 167.54 | 53.8 / 53.3 | 172.44 | 53.4 / 52.9 | 176.95 | 52.9 / 52.4 | 179.40 | 52.7 / 52.2 |
| 9 | 163.73 | 54.0 / 53.7 | 173.55 | 53.1 / 52.7 | 178.54 | 52.6 / 52.3 | 183.49 | 52.1 / 51.8 | 185.62 | 51.9 / 51.6 |
| 10 | 168.67 | 53.5 / 53.2 | 178.74 | 52.5 / 52.3 | 183.78 | 52.0 / 51.8 | 188.74 | 51.5 / 51.3 | 191.12 | 51.3 / 51.1 |
| 11 | 173.00 | 53.0 / 52.8 | 183.25 | 52.0 / 51.8 | 188.31 | 51.5 / 51.3 | 193.20 | 51.1 / 50.9 | 196.05 | 50.8 / 50.6 |
| 12 | 176.81 | 52.6 / 52.4 | 187.18 | 51.6 / 51.4 | 192.22 | 51.1 / 50.9 | 197.56 | 50.6 / 50.4 | 200.04 | 50.4 / 50.2 |
| 13 | 180.20 | 52.3 / 52.1 | 190.63 | 51.3 / 51.1 | 195.99 | 50.8 / 50.6 | 201.07 | 50.3 / 50.1 | 203.52 | 50.0 / 49.8 |
| 14 | 183.21 | 52.0 / 51.8 | 193.66 | 51.0 / 50.8 | 199.10 | 50.5 / 50.3 | 204.14 | 50.0 / 49.8 | 206.56 | 49.7 / 49.5 |

| FPI | 8-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 164.44 | 54.1 / 53.6 | 174.83 | 53.1 / 52.6 | 179.48 | 52.7 / 52.2 | 184.69 | 52.2 / 51.7 | 187.21 | 51.9 / 51.4 |
| 7 | 171.98 | 53.2 / 52.9 | 182.70 | 52.2 / 51.9 | 187.88 | 51.7 / 51.4 | 193.09 | 51.2 / 50.9 | 195.71 | 50.9 / 50.6 |
| 8 | 178.31 | 52.5 / 52.3 | 189.18 | 51.4 / 51.2 | 194.78 | 50.9 / 50.7 | 199.77 | 50.4 / 50.2 | 202.36 | 50.1 / 49.9 |
| 9 | 183.68 | 52.0 / 51.8 | 194.53 | 50.9 / 50.7 | 200.29 | 50.4 / 50.2 | 205.52 | 49.8 / 49.6 | 207.72 | 49.6 / 49.4 |
| 10 | 188.26 | 51.5 / 51.3 | 199.46 | 50.4 / 50.2 | 204.89 | 49.9 / 49.7 | 209.88 | 49.4 / 49.2 | 212.71 | 49.1 / 48.9 |
| 11 | 192.22 | 51.1 / 50.9 | 203.42 | 50.0 / 49.8 | 208.71 | 49.5 / 49.3 | 214.07 | 49.0 / 48.8 | 216.56 | 48.7 / 48.5 |
| 12 | 195.64 | 50.8 / 50.6 | 206.80 | 49.7 / 49.5 | 212.30 | 49.1 / 48.9 | 217.20 | 48.6 / 48.4 | 219.44 | 48.4 / 48.2 |
| 13 | 198.60 | 50.5 / 50.3 | 209.62 | 49.4 / 49.2 | 215.27 | 48.8 / 48.6 | 219.92 | 48.4 / 48.2 | 222.41 | 48.1 / 47.9 |
| 14 | 201.15 | 50.3 / 50.1 | 212.49 | 49.1 / 48.9 | 217.67 | 48.6 / 48.4 | 222.54 | 48.1 / 47.9 | 224.74 | 47.9 / 47.7 |

# HI-F5 5/8 water cooling ari coil capacity data

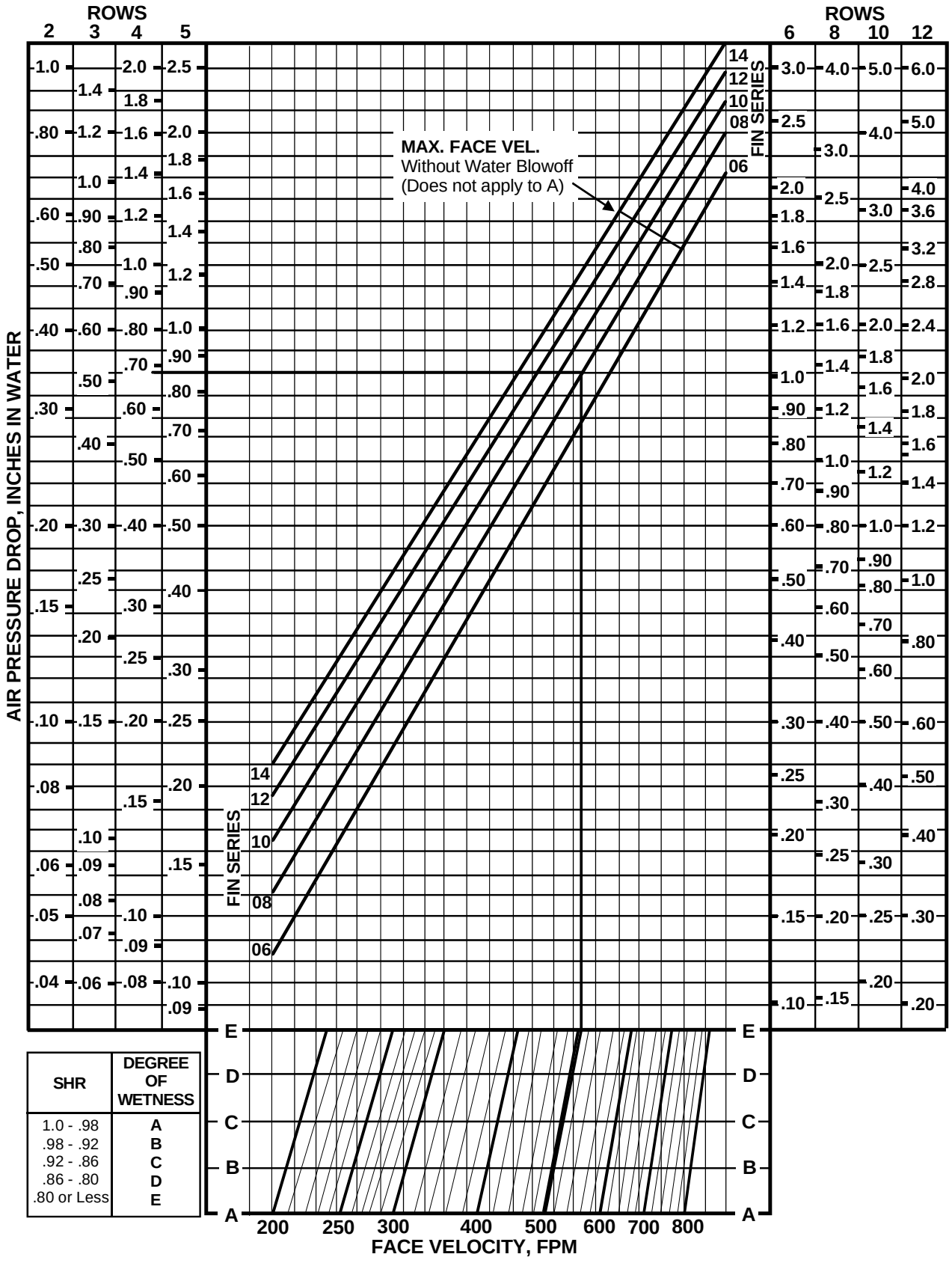
**80° FGPS/67° F Entering Air Temperature** **4 Feet Per Second Water Velocity**
**45° F Entering Water Temperature** **500 FPM Air Velocity**

**Table 3. Continued**

| FPI | 10-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 179.94 | 52.4 / 52.1 | 191.15 | 51.3 / 51.1 | 197.01 | 50.7 / 50.5 | 201.98 | 50.2 / 50.0 | 204.59 | 49.9 / 49.7 |
| 7 | 187.12 | 51.6 / 51.4 | 198.61 | 50.5 / 50.3 | 204.22 | 50.0 / 49.8 | 209.34 | 49.4 / 49.2 | 211.96 | 49.2 / 49.0 |
| 8 | 192.65 | 51.1 / 50.9 | 204.48 | 49.9 / 49.7 | 210.16 | 49.4 / 49.2 | 215.64 | 48.8 / 48.6 | 217.41 | 48.6 / 48.4 |
| 9 | 197.48 | 50.6 / 50.4 | 209.09 | 49.5 / 49.3 | 214.88 | 48.9 / 48.7 | 219.76 | 48.4 / 48.2 | 221.88 | 48.2 / 48.0 |
| 10 | 201.85 | 50.2 / 50.0 | 213.45 | 49.0 / 48.8 | 218.75 | 48.5 / 48.3 | 223.73 | 48.0 / 47.8 | 225.94 | 47.7 / 47.5 |
| 11 | 204.73 | 49.9 / 49.7 | 216.83 | 48.7 / 48.5 | 221.93 | 48.1 / 47.9 | 226.78 | 47.6 / 47.4 | 228.86 | 47.4 / 47.2 |
| 12 | 207.93 | 49.6 / 49.4 | 219.69 | 48.4 / 48.2 | 224.85 | 47.8 / 47.6 | 229.29 | 47.4 / 47.2 | 231.21 | 47.2 / 47.0 |
| 13 | 210.52 | 49.3 / 49.1 | 222.13 | 48.1 / 47.9 | 227.17 | 47.6 / 47.4 | 231.37 | 47.2 / 47.0 | 233.39 | 46.9 / 46.7 |
| 14 | 212.81 | 49.1 / 48.9 | 224.21 | 47.9 / 47.7 | 229.14 | 47.4 / 47.2 | 233.08 | 47.0 / 46.8 | 235.11 | 46.8 / 46.6 |
| FPI | 12-ROW - 24" X 48" FACE AREA | | | | | | | | | |
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 191.55 | 51.2 / 51.0 | 203.64 | 50.0 / 49.8 | 209.47 | 49.4 / 49.2 | 214.50 | 48.9 / 48.7 | 217.26 | 48.6 / 48.4 |
| 7 | 198.10 | 50.6 / 50.4 | 210.29 | 49.3 / 49.1 | 215.83 | 48.8 / 48.6 | 220.70 | 48.3 / 48.1 | 223.13 | 48.0 / 47.8 |
| 8 | 203.53 | 50.0 / 49.8 | 215.50 | 48.8 / 48.6 | 220.80 | 48.3 / 48.1 | 225.79 | 47.7 / 47.5 | 227.72 | 47.5 / 47.3 |
| 9 | 207.66 | 49.6 / 49.4 | 219.69 | 48.4 / 48.2 | 224.95 | 47.8 / 47.6 | 229.46 | 47.4 / 47.2 | 231.38 | 47.2 / 47.0 |
| 10 | 211.30 | 49.2 / 49.0 | 223.09 | 48.0 / 47.8 | 228.17 | 47.5 / 47.3 | 232.33 | 47.1 / 46.9 | 234.40 | 46.8 / 46.6 |
| 11 | 214.39 | 48.9 / 48.7 | 225.87 | 47.7 / 47.5 | 230.79 | 47.2 / 47.0 | 234.87 | 46.8 / 46.6 | 236.71 | 46.6 / 46.4 |
| 12 | 217.06 | 48.7 / 48.5 | 228.43 | 47.5 / 47.3 | 232.92 | 47.0 / 46.8 | 236.84 | 46.6 / 46.4 | 238.32 | 46.4 / 46.2 |
| 13 | 219.39 | 48.4 / 48.2 | 230.44 | 47.3 / 47.1 | 234.65 | 46.8 / 46.6 | 238.32 | 46.4 / 46.2 | 239.85 | 46.3 / 46.1 |
| 14 | 221.43 | 48.2 / 48.0 | 232.14 | 47.1 / 46.9 | 236.33 | 46.6 / 46.4 | 239.55 | 46.3 / 46.1 | 241.06 | 46.1 / 45.9 |

## HI-F5 coils air pressure drop

**Figure 1.**




| SHR | DEGREE OF WETNESS |
|---|---|
| 1.0 - .98 | A |
| .98 - .92 | B |
| .92 - .86 | C |
| .86 - .80 | D |
| .80 or Less | E |

NOTE: The letters A, B, C, D or E indicate the degree of wetness at which the coil would be operating. Dry coils are shown by the letter A, wet coils by the letter E. Intermediate conditions are shown by the letters B, C and D. Air pressure drop for odd fin spacings may be found by interpolation.

# E-F5 5/8 water cooling ari coil capacity data

**80° F/67° F Entering Air Temperature** **4 Feet Per Second Water Velocity**
**45° F Entering Water Temperature** **500 FPM Air Velocity**

**Table 4.**

| FPI | 2-ROW - 24" X 48" FACE AREA | | | | 3-ROW - 24" X 48" FACE AREA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5MH 1/2 SERPENTINE | | 5MS 1 SERPENTINE | | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB |
| 6 | 59.04 | 70.2 / 62.5 | 61.53 | 70.0 / 62.3 | 87.65 | 65.3 / 60.3 | 91.29 | 64.9 / 60.0 | 93.09 | 64.8 / 59.8 |
| 7 | 64.41 | 69.2 / 62.1 | 67.61 | 68.9 / 61.9 | 93.93 | 64.1 / 59.8 | 98.05 | 63.7 / 59.4 | 100.10 | 63.5 / 59.2 |
| 8 | 69.59 | 68.2 / 61.7 | 73.11 | 67.8 / 61.4 | 99.41 | 63.1 / 59.3 | 104.04 | 62.7 / 58.9 | 106.33 | 62.5 / 58.7 |
| 9 | 74.07 | 67.3 / 61.4 | 78.39 | 66.9 / 61.0 | 104.34 | 62.2 / 58.9 | 109.37 | 61.7 / 58.5 | 111.88 | 61.5 / 58.3 |
| 10 | 78.10 | 66.4 / 61.0 | 82.91 | 66.0 / 60.6 | 108.82 | 61.4 / 58.5 | 114.04 | 60.9 / 58.1 | 116.86 | 60.7 / 57.8 |
| 11 | 81.76 | 65.7 / 60.7 | 87.04 | 65.2 / 60.3 | 112.90 | 60.7 / 58.2 | 118.32 | 60.2 / 57.7 | 121.36 | 59.9 / 57.5 |
| 12 | 85.08 | 65.0 / 60.5 | 90.82 | 64.5 / 60.0 | 116.64 | 60.0 / 57.9 | 122.46 | 59.5 / 57.4 | 125.43 | 59.2 / 57.1 |
| 13 | 88.20 | 64.3 / 60.2 | 94.28 | 63.8 / 59.7 | 120.07 | 59.5 / 57.6 | 126.06 | 58.9 / 57.0 | 129.08 | 58.6 / 56.8 |
| 14 | 90.99 | 63.7 / 60.0 | 97.47 | 63.2 / 59.5 | 123.24 | 59.0 / 57.3 | 129.39 | 58.4 / 56.8 | 132.65 | 58.1 / 56.5 |

| FPI | 4-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 105.97 | 62.4 / 58.8 | 111.38 | 61.9 / 58.3 | 113.99 | 61.6 / 58.1 | 116.60 | 61.4 / 57.9 | 117.91 | 61.3 / 57.8 |
| 7 | 113.23 | 61.1 / 58.1 | 118.85 | 60.6 / 57.7 | 121.78 | 60.4 / 57.4 | 124.71 | 60.1 / 57.2 | 126.18 | 59.9 / 57.0 |
| 8 | 119.21 | 60.1 / 57.6 | 125.37 | 59.6 / 57.1 | 128.59 | 59.3 / 56.8 | 131.81 | 59.0 / 56.5 | 133.43 | 58.8 / 56.4 |
| 9 | 124.54 | 59.2 / 57.2 | 131.06 | 58.6 / 56.6 | 134.59 | 58.3 / 56.3 | 138.08 | 58.0 / 56.0 | 139.82 | 57.8 / 55.8 |
| 10 | 129.32 | 58.5 / 56.8 | 136.42 | 57.8 / 56.1 | 139.92 | 57.5 / 55.8 | 143.63 | 57.2 / 55.5 | 145.49 | 57.0 / 55.3 |
| 11 | 133.63 | 57.8 / 56.4 | 140.98 | 57.1 / 55.7 | 144.67 | 56.8 / 55.4 | 148.68 | 56.4 / 55.0 | 150.35 | 56.3 / 54.9 |
| 12 | 137.54 | 57.2 / 56.0 | 145.11 | 56.5 / 55.4 | 149.21 | 56.1 / 55.0 | 153.04 | 55.8 / 54.7 | 155.08 | 55.6 / 54.5 |
| 13 | 141.09 | 56.7 / 55.7 | 149.21 | 56.0 / 55.0 | 152.66 | 55.6 / 54.7 | 157.05 | 55.2 / 54.3 | 159.16 | 55.0 / 54.1 |
| 14 | 144.57 | 56.3 / 55.4 | 152.11 | 55.5 / 54.7 | 156.50 | 55.1 / 54.3 | 160.67 | 54.7 / 54.0 | 162.85 | 54.5 / 53.8 |

| FPI | 5-ROW - 24" X 48" FACE AREA | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 121.48 | 60.1 / 57.4 | 128.21 | 59.4 / 56.9 | 131.57 | 59.1 / 56.6 | 134.93 | 58.8 / 56.3 |
| 7 | 135.22 | 57.9 / 56.2 | 136.03 | 58.2 / 56.2 | 139.76 | 57.9 / 55.8 | 143.47 | 57.5 / 55.5 |
| 8 | 140.71 | 57.1 / 55.8 | 142.78 | 57.2 / 55.6 | 147.08 | 56.8 / 55.2 | 150.64 | 56.4 / 54.9 |
| 9 | 145.67 | 56.3 / 55.3 | 149.21 | 56.3 / 55.0 | 152.69 | 55.9 / 54.7 | 157.26 | 55.5 / 54.3 |
| 10 | 149.95 | 55.8 / 54.9 | 153.95 | 55.6 / 54.6 | 157.97 | 55.2 / 54.2 | 162.87 | 54.7 / 53.7 |
| 11 | 149.95 | 55.8 / 54.9 | 158.63 | 54.9 / 54.1 | 162.94 | 54.5 / 53.7 | 167.82 | 54.1 / 53.3 |
| 12 | 153.99 | 55.2 / 54.6 | 163.04 | 54.4 / 53.7 | 167.82 | 53.9 / 53.3 | 172.19 | 53.5 / 52.9 |
| 13 | 157.40 | 54.8 / 54.3 | 166.64 | 53.9 / 53.4 | 171.40 | 53.4 / 53.0 | 176.08 | 53.0 / 52.5 |
| 14 | 160.60 | 54.4 / 54.0 | 170.03 | 53.5 / 53.1 | 174.85 | 53.0 / 52.6 | 179.68 | 52.5 / 52.2 |

| FPI | 6-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 134.88 | 58.2 / 56.3 | 142.46 | 57.5 / 55.6 | 146.79 | 57.0 / 55.2 | 150.34 | 56.7 / 54.9 | 152.06 | 56.5 / 54.7 |
| 7 | 142.35 | 57.0 / 55.6 | 150.35 | 56.3 / 54.9 | 154.45 | 55.9 / 54.5 | 159.17 | 55.5 / 54.1 | 161.33 | 55.2 / 53.9 |
| 8 | 148.44 | 56.1 / 55.1 | 157.16 | 55.3 / 54.3 | 161.63 | 54.9 / 53.9 | 166.54 | 54.4 / 53.4 | 168.83 | 54.2 / 53.2 |
| 9 | 154.17 | 55.4 / 54.5 | 163.35 | 54.5 / 53.7 | 168.37 | 54.0 / 53.2 | 172.97 | 53.6 / 52.8 | 175.21 | 53.4 / 52.6 |
| 10 | 158.81 | 54.7 / 54.1 | 168.49 | 53.8 / 53.2 | 173.24 | 53.4 / 52.8 | 178.28 | 52.9 / 52.3 | 180.74 | 52.6 / 52.1 |
| 11 | 163.12 | 54.2 / 53.7 | 173.04 | 53.2 / 52.8 | 178.07 | 52.8 / 52.3 | 182.97 | 52.3 / 51.8 | 185.47 | 52.0 / 51.6 |
| 12 | 166.96 | 53.7 / 53.4 | 177.08 | 52.7 / 52.4 | 182.17 | 52.3 / 51.9 | 187.04 | 51.8 / 51.5 | 189.56 | 51.5 / 51.2 |
| 13 | 170.42 | 53.3 / 53.0 | 180.69 | 52.3 / 52.1 | 185.80 | 51.8 / 51.6 | 190.70 | 51.3 / 51.1 | 193.53 | 51.1 / 50.8 |
| 14 | 173.53 | 53.0 / 52.8 | 183.92 | 52.0 / 51.8 | 189.02 | 51.5 / 51.3 | 194.37 | 50.9 / 50.7 | 196.82 | 50.7 / 50.5 |

| FPI | 8-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 155.56 | 55.4 / 54.4 | 165.08 | 54.5 / 53.5 | 170.14 | 54.0 / 53.1 | 175.08 | 53.5 / 52.6 | 177.50 | 53.3 / 52.4 |
| 7 | 162.83 | 54.4 / 53.8 | 173.18 | 53.4 / 52.8 | 178.15 | 53.0 / 52.3 | 183.32 | 52.5 / 51.8 | 185.82 | 52.2 / 51.6 |
| 8 | 169.03 | 53.6 / 53.2 | 179.67 | 52.6 / 52.2 | 184.73 | 52.1 / 51.7 | 189.99 | 51.6 / 51.2 | 192.92 | 51.3 / 50.9 |
| 9 | 174.37 | 53.0 / 52.7 | 185.27 | 51.9 / 51.6 | 190.40 | 51.4 / 51.1 | 196.08 | 50.9 / 50.6 | 198.70 | 50.6 / 50.3 |
| 10 | 179.02 | 52.5 / 52.2 | 189.99 | 51.4 / 51.2 | 195.72 | 50.8 / 50.6 | 200.93 | 50.3 / 50.1 | 203.54 | 50.0 / 49.8 |
| 11 | 183.09 | 52.0 / 51.8 | 194.03 | 51.0 / 50.8 | 199.85 | 50.4 / 50.2 | 205.01 | 49.9 / 49.7 | 207.57 | 49.6 / 49.4 |
| 12 | 186.68 | 51.7 / 51.5 | 197.95 | 50.6 / 50.4 | 203.46 | 50.0 / 49.8 | 208.45 | 49.5 / 49.3 | 211.33 | 49.2 / 49.0 |
| 13 | 189.87 | 51.4 / 51.2 | 201.16 | 50.3 / 50.1 | 206.58 | 49.7 / 49.5 | 211.98 | 49.2 / 49.0 | 214.43 | 48.9 / 48.7 |
| 14 | 192.71 | 51.1 / 50.9 | 203.99 | 50.0 / 49.8 | 209.24 | 49.5 / 49.3 | 214.75 | 48.9 / 48.7 | 217.32 | 48.6 / 48.4 |

# E-F5 5/8 water cooling ari coil capacity data

**80° F/67° F Entering Air Temperature** **4 Feet Per Second Water Velocity**
**45° F Entering Water Temperature** **500 FPM Air Velocity**

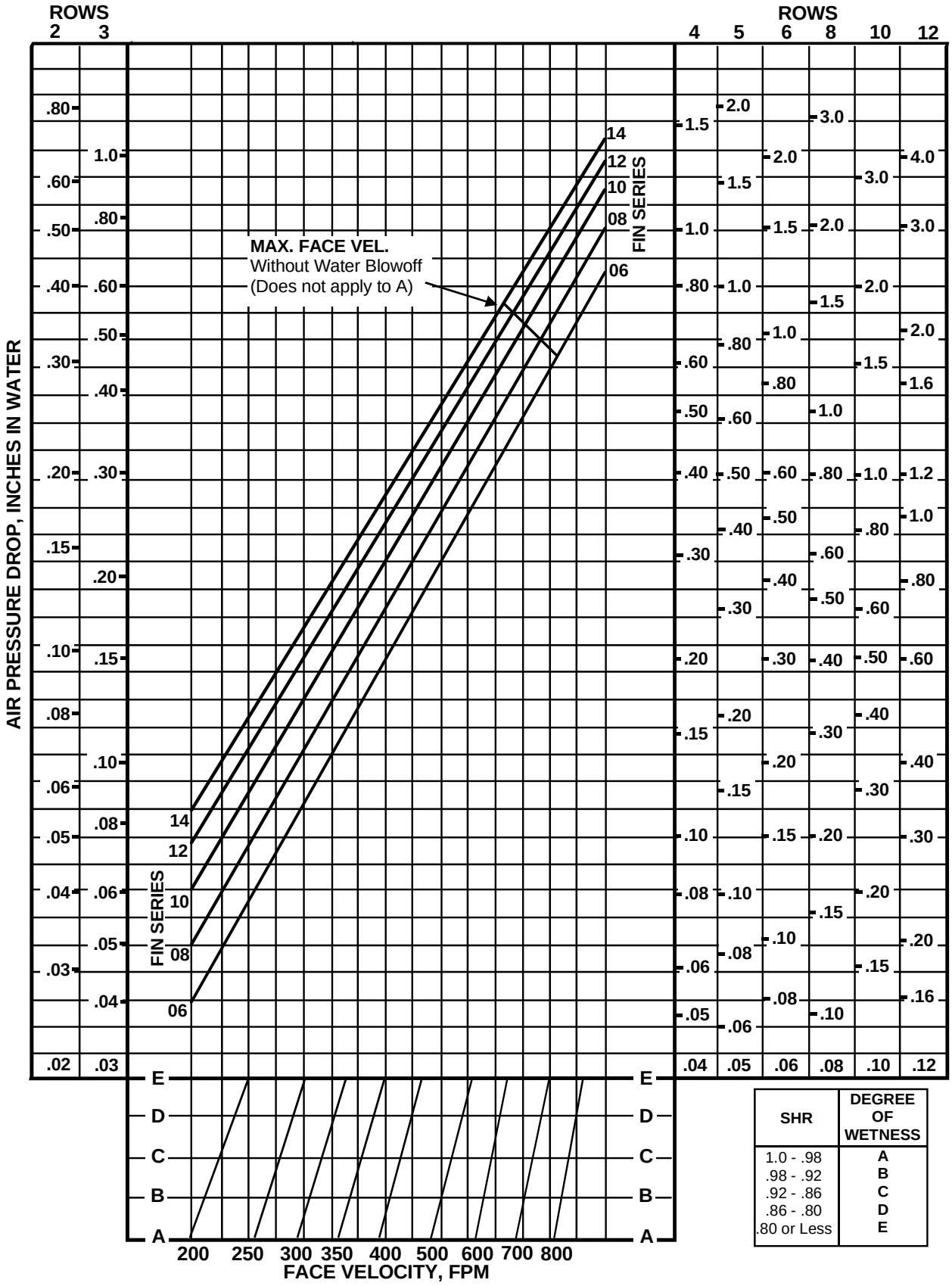
**Table 4 - Continued**

| FPI | 10-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 171.32 | 53.5 / 53.0 | 182.28 | 52.4 / 51.9 | 187.43 | 51.9 / 51.4 | 193.17 | 51.3 / 50.9 | 195.78 | 51.1 / 50.6 |
| 7 | 178.37 | 52.6 / 52.3 | 189.48 | 51.5 / 51.2 | 195.21 | 51.0 / 50.7 | 200.74 | 50.4 / 50.1 | 203.36 | 50.1 / 49.8 |
| 8 | 184.31 | 51.9 / 51.7 | 195.86 | 50.8 / 50.6 | 201.30 | 50.3 / 50.1 | 206.73 | 49.7 / 49.5 | 209.25 | 49.5 / 49.3 |
| 9 | 189.35 | 51.4 / 51.2 | 200.93 | 50.3 / 50.1 | 206.48 | 49.7 / 49.5 | 211.96 | 49.2 / 49.0 | 214.57 | 48.9 / 48.7 |
| 10 | 193.27 | 51.0 / 50.8 | 205.18 | 49.9 / 49.7 | 210.93 | 49.3 / 49.1 | 215.96 | 48.8 / 48.6 | 218.37 | 48.5 / 48.3 |
| 11 | 196.94 | 50.7 / 50.5 | 208.97 | 49.5 / 49.3 | 214.49 | 48.9 / 48.7 | 219.30 | 48.4 / 48.2 | 222.01 | 48.1 / 47.9 |
| 12 | 200.14 | 50.4 / 50.2 | 212.15 | 49.2 / 49.0 | 217.55 | 48.6 / 48.4 | 222.61 | 48.1 / 47.9 | 224.85 | 47.8 / 47.6 |
| 13 | 203.12 | 50.1 / 49.9 | 214.91 | 48.9 / 48.7 | 220.17 | 48.3 / 48.1 | 225.12 | 47.8 / 47.6 | 227.23 | 47.6 / 47.4 |
| 14 | 205.41 | 49.8 / 49.6 | 217.32 | 48.6 / 48.4 | 222.42 | 48.1 / 47.9 | 227.28 | 47.6 / 47.4 | 229.32 | 47.4 / 47.2 |

| FPI | 12-ROW - 24" X 48" FACE AREA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 5WH 1/2 SERPENTINE | | 5WL 3/4 SERPENTINE | | 5WS 1 SERPENTINE | | 5WM 1-1/2 SERPENTINE | | 5WD 2 SERPENTINE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 183.74 | 52.0 / 51.8 | 195.52 | 50.9 / 50.6 | 200.96 | 50.3 / 50.1 | 206.45 | 49.8 / 49.5 | 208.97 | 49.5 / 49.3 |
| 7 | 190.08 | 51.4 / 51.2 | 202.24 | 50.2 / 50.0 | 207.52 | 49.6 / 49.4 | 213.40 | 49.0 / 48.8 | 216.02 | 48.8 / 48.6 |
| 8 | 195.53 | 50.8 / 50.6 | 207.54 | 49.6 / 49.4 | 213.72 | 49.0 / 48.8 | 218.45 | 48.5 / 48.3 | 221.15 | 48.2 / 48.0 |
| 9 | 200.09 | 50.4 / 50.2 | 212.34 | 49.1 / 48.9 | 217.81 | 48.6 / 48.4 | 222.90 | 48.0 / 47.8 | 225.26 | 47.8 / 47.6 |
| 10 | 203.92 | 50.0 / 49.8 | 216.13 | 48.7 / 48.5 | 221.37 | 48.2 / 48.0 | 226.31 | 47.7 / 47.5 | 228.52 | 47.5 / 47.3 |
| 11 | 207.17 | 49.7 / 49.5 | 219.31 | 48.4 / 48.2 | 224.62 | 47.9 / 47.7 | 229.08 | 47.4 / 47.2 | 231.10 | 47.2 / 47.0 |
| 12 | 210.03 | 49.4 / 49.2 | 222.00 | 48.1 / 47.9 | 227.18 | 47.6 / 47.4 | 231.44 | 47.2 / 47.0 | 233.54 | 46.9 / 46.7 |
| 13 | 212.53 | 49.1 / 48.9 | 224.30 | 47.9 / 47.7 | 229.35 | 47.4 / 47.2 | 233.59 | 46.9 / 46.7 | 235.43 | 46.7 / 46.5 |
| 14 | 214.75 | 48.9 / 48.7 | 226.26 | 47.7 / 47.5 | 231.19 | 47.2 / 47.0 | 235.27 | 46.7 / 46.5 | 236.96 | 46.6 / 46.4 |

# E-F5 coils air pressure drop

**Figure 2.**

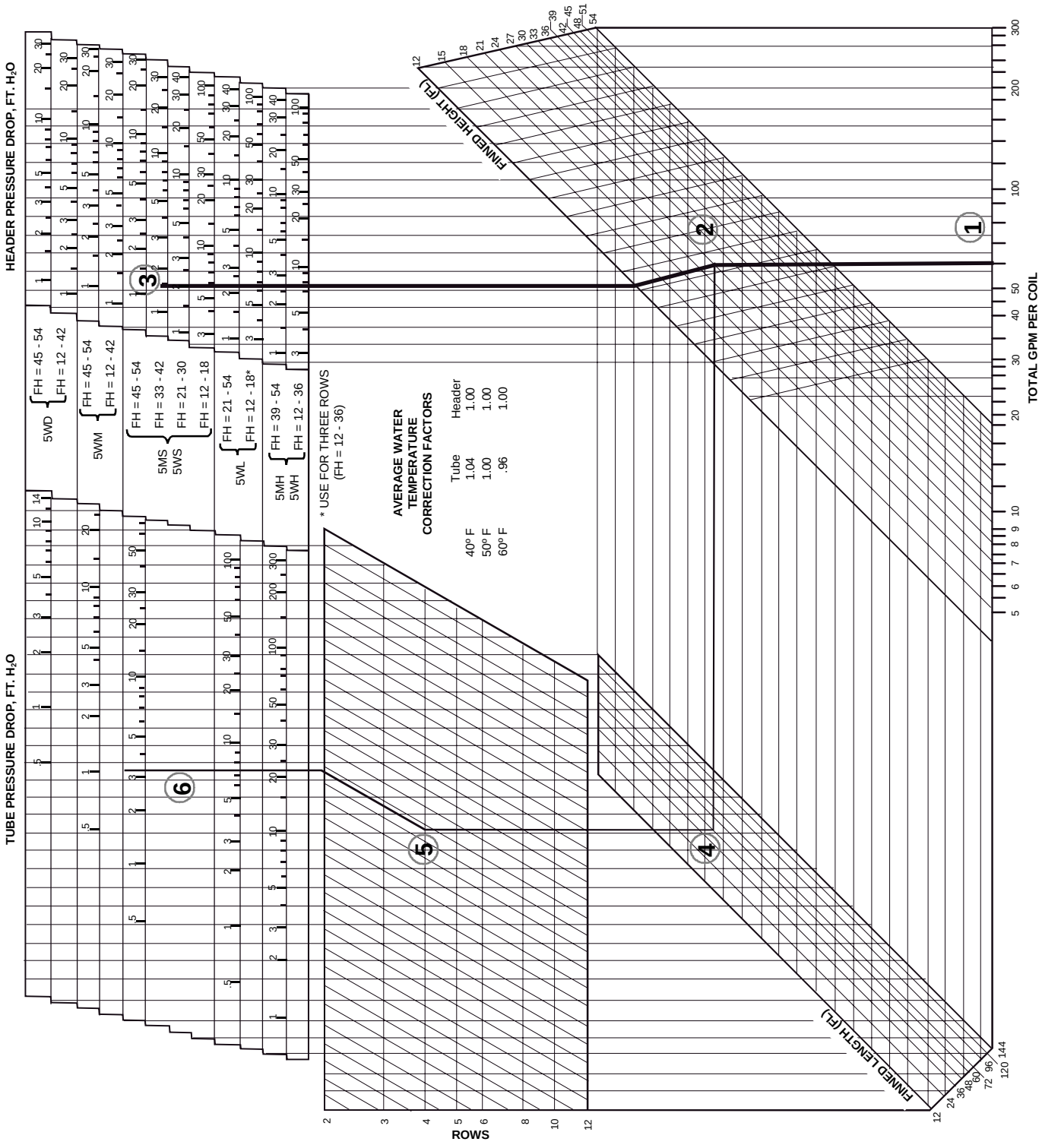



| SHR | DEGREE OF WETNESS |
|---|---|
| 1.0 - .98 | A |
| .98 - .92 | B |
| .92 - .86 | C |
| .86 - .80 | D |
| .80 or Less | E |

NOTE: The letters A, B, C, D or E indicate the degree of wetness at which the coil would be operating. Dry coils are shown by the letter A, wet coils by the letter E. Intermediate conditions are shown by the letters B, C and D. Air pressure drop for odd fin spacings may be found by interpolation.

# HI-F5 & E-F5 coils water pressure drop 5W coils

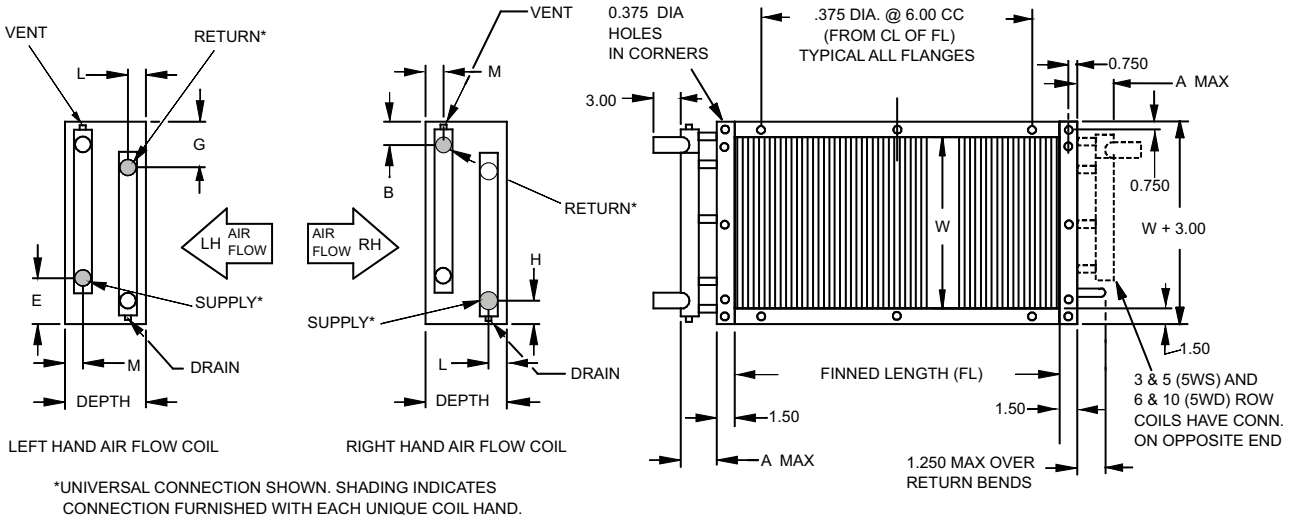
**Figure 3.**



# Dimensional data

## 5W coils - 3 thru 12 rows (12” to 54” FH)

**Figure 4.**




*UNIVERSAL CONNECTION SHOWN. SHADING INDICATES CONNECTION FURNISHED WITH EACH UNIQUE COIL HAND.

### 5WH — 1/2 SERPENTINE

**HORIZONTAL AIR FLOW**

| CONN SIZE | A | B | H | W |
|---|---|---|---|---|
| 1-1/2 | *3.00 | 2.30 | 2.30 | 12.00 - 36.00 |
| 2 | *3.50 | 2.55 | 2.55 | 39.00 - 54.00 |

* 3 ROW A = 3.50 FOR 1-1/2” CONN
4.00 FOR 2” CONN.

**VERTICAL AIR FLOW**

| CONN SIZE | A | B | W |
|---|---|---|---|
| 1-1/2 | *3.00 | 2.30 | 12.00 - 36.00 |
| 2 | *3.50 | 2.55 | 39.00 - 54.00 |

| HORZ. & VERT. AIR FLOW | W | ROW | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| | | DEPTH | 6.00 | 7.50 | 8.50 | 10.00 | 12.50 | 15.00 | 18.00 |
| | N/A | L | 1.70 | 1.80 | 1.66 | 1.75 | 1.69 | 1.66 | 1.86 |
| | N/A | M | 1.70 | 1.80 | 1.66 | 1.75 | 1.69 | 1.66 | 1.86 |
| HORZ. AIR FLOW | 12.00 - 36.00 | E | 6.05 | 6.05 | 6.05 | 6.05 | 7.55 | 7.55 | 7.55 |
| | | G | 5.30 | 6.05 | 6.80 | 6.05 | 7.55 | 7.55 | 7.55 |
| | 39.00 - 54.00 | E | 6.30 | 6.30 | 6.30 | 6.30 | 7.80 | 7.80 | 7.80 |
| | | G | 5.55 | 6.30 | 7.05 | 6.30 | 7.80 | 7.80 | 7.80 |
| VERT. AIR FLOW | 12.00 - 36.00 | E | 6.05 | 6.05 | 4.55 | 4.55 | 4.55 | 4.55 | 4.55 |
| | | G | 5.30 | 6.05 | 3.80 | 3.05 | 3.05 | 3.05 | 3.05 |
| | | H | 3.05 | 2.30 | 3.05 | 3.80 | 3.80 | 3.80 | 3.80 |
| | 39.00 - 54.00 | E | 6.30 | 6.30 | 4.80 | 4.80 | 4.80 | 4.80 | 4.80 |
| | | G | 5.55 | 6.30 | 4.05 | 3.30 | 3.30 | 3.30 | 3.30 |
| | | H | 3.30 | 2.55 | 3.30 | 4.05 | 4.05 | 4.05 | 4.05 |

### 5WL — 3/4 SERPENTINE

| ROW | DEPTH | CONN SIZE | A | B | E | G | H | L | M | W |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 6.00 | 1-1/2 | 3.00 | 2.30 | 4.55 | 3.80 | 2.30 | 1.70 | 1.70 | 12.00 — 36.00 |
| | 6.00 | 2 | 3.50 | 2.55 | 4.80 | 4.05 | 2.55 | 1.70 | 1.70 | 39.00 — 42.00 |
| | 7.50 | 2-1/2 | 3.63 | 2.80 | 5.05 | 4.30 | 2.80 | 2.20 | 1.80 | 45.00 — 54.00 |

| CONN SIZE | A | B | E | G | H | W |
|---|---|---|---|---|---|---|
| 1-1/2 | *3.00 | 2.30 | 4.55 | *4.55 | 2.30 | 12.00 — 18.00 |
| 2 | *3.50 | 2.55 | 4.80 | *4.80 | 2.55 | 21.00 — 30.00 |
| 2-1/2 | *3.63 | 2.80 | 5.05 | *5.05 | 2.80 | 33.00 — 54.00 |

| ROW | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|
| DEPTH | 7.50 | 8.50 | 10.00 | 12.50 | 15.00 | 18.00 |
| L | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |
| M | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |

3.50 FOR 1-1/2 CONN.
*5 & 12 ROW A = 4.00 FOR 2” CONN.
4.13 FOR 2-1/2” CONN.

3.80 FOR 1-1/2 CONN.
*5 ROW G = 4.05 FOR 2” CONN.
4.30 FOR 2-1/2” CONN.

6.05 FOR 1-1/2 CONN.
*12 ROW G = 6.30 FOR 2” CONN.
6.55 FOR 2-1/2” CONN.

# 5W coils - 3 thru 12 rows (12” to 54” FH)

## 5WS — 1 SERPENTINE

| CONN SIZE | A | B | E | G | H | W |
|---|---|---|---|---|---|---|
| 1-1/2 | 2.75 | 2.30 | *4.55 | *4.55 | 2.30 | 12.00 - 18.00 |
| 2 | 3.25 | 2.55 | *4.80 | *4.80 | 2.55 | 21.00 - 30.00 |
| 2-1/2 | 3.80 | 2.80 | *5.05 | *5.05 | 2.30 | 33.00 - 42.00 |
| 3 | 3.80 | 3.06 | *5.40 | *5.40 | 3.06 | 45.00 - 54.00 |

| ROW | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|
| DEPTH | 6.00 | 7.50 | 8.50 | 10.00 | 12.50 | 15.00 | 18.00 |
| L | 1.70 | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |
| M | 1.70 | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |

*3 & 5 ROW G & E = 2.30 FOR 1-1/2 CONN.
2.55 FOR 2” CONN.
2.80 FOR 2-1/2” CONN.
3.06 FOR 3” CONN.

## 5WM — 1-1/2 SERPENTINE

| FIN HEIGHT | 12.00 - 54.00 | | | | | |
|---|---|---|---|---|---|---|
| ROW | 4 | 5 | 6 | 8 | 10 | 12 |
| DEPTH | 8.50 | 8.50 | 10.00 | 12.50 | 15.00 | 18.00 |
| L | 1.78 | 2.30 | 2.41 | 3.40 | 2.30 | 2.50 |
| M | 2.30 | 2.30 | 2.40 | 2.36 | 2.30 | 2.50 |
| A | 4.00 | | | | | |

| CONN SIZE | 4 THRU 12 ROW | | | | | |
|---|---|---|---|---|---|---|
| | A | B | E | G | H | W |
| 2-1/2 | *4.13 | 2.80 | 3.55 | 3.55 | 2.80 | 12.00 - 42.00 |
| 3 | *4.50 | 3.06 | 3.80 | 3.80 | 3.06 | 45.00 - 54.00 |

*8 ROW A = 3.63 FOR 2-1/2” CONN.
4.00 FOR 3” CONN.

## 5WD — 2 SERPENTINE

| FIN HEIGHT | 12.00 - 54.00 | | | | |
|---|---|---|---|---|---|
| ROW | 4 | 6 | 8 | 10 | 12 |
| DEPTH | 8.50 | 10.00 | 12.50 | 15.00 | 18.00 |
| L | 1.78 | 2.40 | 2.36 | 2.30 | 2.50 |
| M | 2.30 | 2.40 | 2.36 | 2.30 | 2.50 |
| A | 3.75 | | | | |

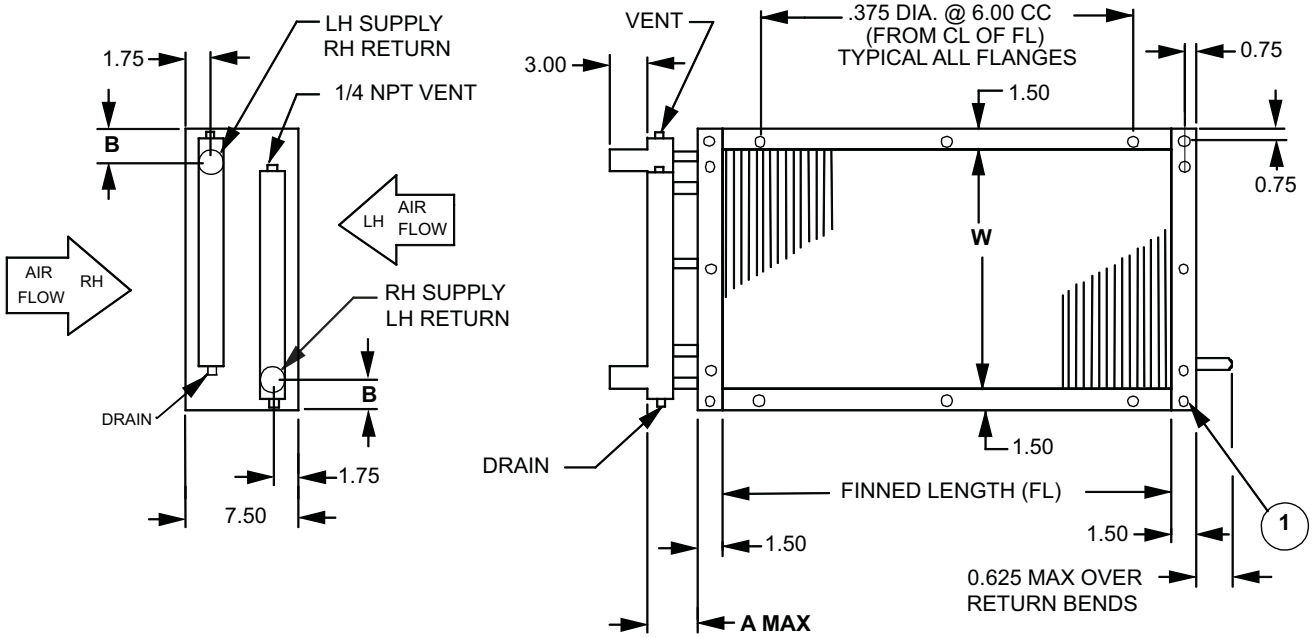
| CONN SIZE | 4 THRU 12 ROW | | | | | |
|---|---|---|---|---|---|---|
| | A | B | E | G | H | W |
| 2-1/2 | 3.38 | 2.80 | 2.80 | 2.80 | 2.80 | 12.00 - 42.00 |
| 3 | 3.75 | 3.06 | 3.06 | 3.06 | 3.06 | 45.00 - 54.00 |

### GENERAL NOTES:

1. VERTICAL OR HORIZONTAL AIRFLOW MUST BE SPECIFIED.
2. ALL COILS DRAINABLE.
3. CONNECT COILS FOR COUNTERFLOW; I.E., ENTERING WATER CONNECTION ON LEAVING AIR SIDE OF COIL.
4. CONNECTIONS ARE PIPE, NPT (EXT.).
5. ALL DIMENSIONS IN INCHES.
6. CONNECTION LOCATION ± .125
7. VENT & DRAIN, 1/4 NPT.

## 2 row water cooling coils with splayed headers (12” to 54” FH)

**Figure 5.**




| MODEL TYPE | CONN SIZE | A | B | H | W |
|---|---|---|---|---|---|
| 5MS | 1-1/2 | 3.000 | 2.297 | 2.297 | 12.00 - 18.00 |
| | 2 | 3.500 | 2.547 | 2.547 | 21.00 - 30.00 |
| | 2-1/2 | 3.625 | 2.797 | 2.797 | 33.00 - 42.00 |
| | 3 | 4.000 | 3.109 | 3.109 | 45.00 - 54.00 |
| 5MH | 1-1/2 | 3.000 | 2.297 | 2.297 | 12.00 - 36.00 |
| | 2 | 3.500 | 2.547 | 2.547 | 39.00 - 54.00 |

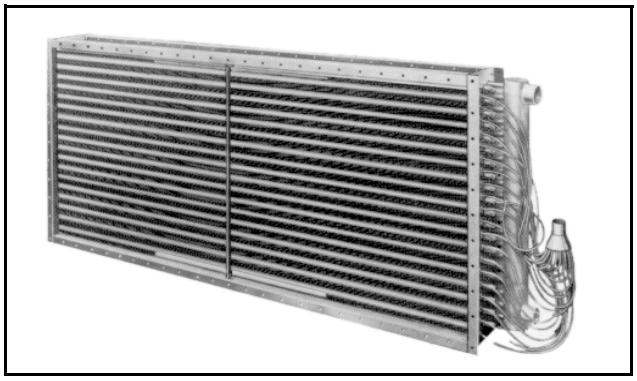
**GENERAL NOTES:**

1. 3/8" DIAMETER HOLES IN CORNER.
2. CONNECT COILS FOR COUNTERFLOW; I.E., ENTERING WATER CONNECTION ON LEAVING SIDE OF COIL. CONNECTION DESIGNATION SHOWN IS FOR RIGHT-HAND APPLICATIONS. FOR LEFT-HAND APPLICATIONS, REVERSE INDICATED DIRECTION OF WATER FLOW; I.E., SUPPLY CONNECTION BECOMES RETURN CONNECTION.
3. ALL DIMENSIONS IN INCHES.
4. COILS HAVE ¼" VENTS & DRAINS.

# HI-F5 & E-F5 evaporator coils

HI-F5 and E-F5 Evaporator coils are designed and engineered for efficient operation with either Refrigerant 22, R407C, R410A or 134a. (R407C, R410A and R-134a coils are not ARI certified.) The performance capabilities are excellent for comfort cooling, process refrigeration, and moisture control dehumidifying.

Direct expansion type 5E evaporator coils are engineered and designed to deliver the maximum possible heat transfer efficiency under all operating conditions. The wide variety of circuiting available offers the opportunity to provide the best circuit for peak coil performance. All evaporator coils are counterflow circuited and equipped with pressure type distributors and all refrigerant distributor tubes are of equal length to provide equal distribution of refrigerant to each circuit.



## Capacity reduction applications

To achieve energy economy, compressors with capacity reduction capability have become an industry standard. Balancing the evaporator coil capacity to the compressor capacity requires the use of face, row or interlaced control coils. To achieve face control, two coils are mounted one above the other and piped to separate refrigerant circuits. A single coil can also be provided with two distributors and two sets of suction connections in a face split configuration.

Row control is achieved by placing one coil in front of the other or by installing a single coil with two separate refrigerant circuits. The first few rows of coil are circuited together and provided with distributor and suction connections. The balance of the coil rows are provided with a second set of distributor and suction connections.

Interlaced control offers the optimum in capacity reduction. Interlaced coils provide higher part load capability than face or row control coils. The unique interlaced circuiting allows the entire face and depth of the coil to be active under part load conditions. Interlaced coils offer higher part load capacity because when only one circuit is active heat transfer is enhanced by additional fin surface that would normally be associated with the other refrigerant circuit.

**Face control, 5EF**
Many standard 5E evaporator coils with normal circuiting (5EN) are furnished with two distributors and two sets of suction connections. Coils with the number of circuits marked with an asterisk (*) in the circuiting availability table on page 22 are normally furnished suitable for 50% capacity reduction face control.

Face control (5EF) coils are also offered to accommodate 50% capacity reduction face control applications. For circuiting availability, refer to page 22.

**Row control, 5ER**
Coils used for row control cannot always be circuited for the reduction capacities desired because of physical limitations. For this reason, row control capacity reduction is offered as standard for 6-row coils only as indicated on page 22. Six-row coils are split 2 rows and 4 rows which offers approximately 50% reduction per split.

**Interlaced control, 5EJ & 5EK**
Interlaced control coils are offered in two configurations, 5EJ and 5EK. 5EJ coils are provided with two distributors and two sets of suction connections. 5EK coils offer a combination interlaced/face split capacity reduction capability. Four separate refrigerant circuits are provided, each with an individual set of distributor and suction connections. Circuiting availability is presented in on page 22.

## Example evaporator coil rating

The capacity data tables in this catalog rate a given coil at the ARI conditions. For example, rate the following coil:

Coil model ..... 5EN0804C
Coil size..... 24x48
Entering dry bulb ..... 80°F
Entering wet bulb..... 67°F
Suction temperature..... 40°F
Airflow..... 500 feet per minute
Refrigerant..... R-22

On page 20, find the table for HI-F5 5/8" coils, 24x48 inches, with R-22. Follow the 4-row column down until you reach the 8 fpi (8 fins per inch) row. This coil will provide 148.03 mbh with 56.6° F leaving dry bulb temperature and 55.1° F leaving wet bulb temperature. Find the air pressure drop for this coil by following the example on page 11. For our example coil rating the air pressure drop equals 0.68 inches w.g.

To select an evaporator coil to meet specific performance requirements, contact your local representative.

## Evaporator capacity data

**Based on 80°F db/67° F wb entering air, 40° F saturated suction, 500 FPM coil face velocity. All capacity data based on 24" x 48" coil face area.**

| FPI | 2-ROW - 24" X 48" FACE AREA | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | Lvg. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | LVG. DB / WB |
| 6 | 76.84 | 67.0 / 61.1 | 62.84 | 69.8 / 62.2 | 63.54 | 68.2 / 62.2 | 51.14 | 70.9 / 63.1 |
| 7 | 83.82 | 65.7 / 60.6 | 69.64 | 68.7 / 61.7 | 69.55 | 67.0 / 61.7 | 57.28 | 69.8 / 62.7 |
| 8 | 90.01 | 64.6 / 60.1 | 75.81 | 67.6 / 61.2 | 74.74 | 65.9 / 61.3 | 62.73 | 68.8 / 62.2 |
| 9 | 95.49 | 63.6 / 59.6 | 81.42 | 66.6 / 60.8 | 79.27 | 65.0 / 60.9 | 67.59 | 67.8 / 61.9 |
| 10 | 100.36 | 62.7 / 59.2 | 86.54 | 65.7 / 60.4 | 83.29 | 64.2 / 60.6 | 71.93 | 67.0 / 61.5 |
| 11 | 104.70 | 61.9 / 58.9 | 91.19 | 64.8 / 60.0 | 86.74 | 63.4 / 60.3 | 75.81 | 66.2 / 61.2 |
| 12 | 108.59 | 61.2 / 58.5 | 95.42 | 64.0 / 59.6 | 89.83 | 62.8 / 60.1 | 79.29 | 65.5 / 60.9 |
| 13 | 112.08 | 60.5 / 58.2 | 99.28 | 63.3 / 59.3 | 92.62 | 62.2 / 59.9 | 82.44 | 64.8 / 60.7 |
| 14 | 115.30 | 60.0 / 58.0 | 102.82 | 62.7 / 59.0 | 95.13 | 61.7 / 59.7 | 85.28 | 64.2 / 60.5 |
| FPI | 3-ROW - 24" X 48" FACE AREA | | | | | | | |
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 108.52 | 62.4 / 58.5 | 100.09 | 64.1 / 59.2 | 89.24 | 64.2 / 60.1 | 83.50 | 65.6 / 60.6 |
| 7 | 115.89 | 61.1 / 57.9 | 107.20 | 62.9 / 58.7 | 94.06 | 63.1 / 59.7 | 88.39 | 64.6 / 60.2 |
| 8 | 122.07 | 60.0 / 57.4 | 113.29 | 61.8 / 58.1 | 97.94 | 62.2 / 59.4 | 92.43 | 63.7 / 59.9 |
| 9 | 127.29 | 59.1 / 56.9 | 118.55 | 60.9 / 57.7 | -- | -- | 95.80 | 62.9 / 59.6 |
| 10 | 131.73 | 58.3 / 56.6 | 123.11 | 60.1 / 57.3 | -- | -- | 98.63 | 62.3 / 59.4 |
| 11 | 135.54 | 57.6 / 56.2 | 127.10 | 59.4 / 57.0 | -- | -- | -- | -- |
| 12 | 138.84 | 57.1 / 55.9 | 130.60 | 58.8 / 56.7 | -- | -- | -- | -- |
| 13 | -- | -- | 133.69 | 58.2 / 56.4 | -- | -- | -- | -- |
| 14 | -- | -- | 136.44 | 57.7 / 56.1 | 112.31 | 59.1 / 58.2 | -- | -- |
| FPI | 4-ROW - 24" X 48" FACE AREA | | | | | | | |
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 130.03 | 59.3 / 56.7 | 119.30 | 61.1 / 57.6 | 106.55 | 61.4 / 58.7 | 96.69 | 63.2 / 59.5 |
| 7 | 139.72 | 57.8 / 55.9 | 128.35 | 59.7 / 56.9 | 115.44 | 60.0 / 58.0 | 105.09 | 61.9 / 58.8 |
| 8 | 148.03 | 56.6 / 55.1 | 136.30 | 58.5 / 56.2 | 122.83 | 58.9 / 57.3 | 112.31 | 60.7 / 58.2 |
| 9 | 155.21 | 55.6 / 54.5 | 143.30 | 57.5/55.5 | 129.19 | 58.0 / 56.8 | 118.56 | 59.8 / 57.7 |
| 10 | 161.44 | 54.7 / 53.9 | 149.47 | 56.6/55.0 | 134.71 | 57.2 / 56.3 | 124.05 | 59.0 / 57.2 |
| 11 | 166.89 | 54.0 / 53.4 | 154.96 | 55.8 / 54.5 | 139.54 | 56.6 / 55.9 | 128.87 | 58.2 / 56.8 |
| 12 | 171.83 | 53.4 / 52.9 | 159.85 | 55.1 / 54.0 | 143.78 | 56.0 / 55.5 | 133.15 | 57.6 / 56.4 |
| 13 | 176.11 | 52.9 / 52.5 | 164.25 | 54.5 / 53.6 | 147.52 | 55.6 / 55.2 | 136.98 | 57.1 / 56.1 |
| 14 | 179.95 | 52.4 / 52.1 | 168.19 | 54.0 / 53.3 | 150.84 | 55.2 / 54.9 | 140.42 | 56.6 / 55.8 |
| FPI | 5-ROW - 24" X 48" FACE AREA | | | | | | | |
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 155.40 | 56.1 / 54.4 | 144.28 | 57.9 / 55.4 | 132.21 | 58.3 / 56.5 | 123.04 | 59.9 / 57.3 |
| 7 | 165.09 | 54.7 / 53.5 | 153.69 | 56.5 / 54.6 | 140.05 | 57.1 / 55.8 | 130.87 | 58.7 / 56.6 |
| 8 | 173.15 | 53.6 / 52.8 | 161.71 | 55.4 / 53.9 | 146.45 | 56.2 / 55.2 | 137.40 | 57.7 / 56.1 |
| 9 | 179.93 | 52.7 / 52.1 | 168.58 | 54.4 / 53.2 | 151.82 | 55.4 / 54.8 | 142.91 | 56.9 / 55.6 |
| 10 | 185.67 | 52.0 / 51.6 | 174.52 | 53.6 / 52.7 | 156.26 | 54.8 / 54.4 | 147.59 | 56.2 / 55.1 |
| 11 | 190.57 | 51.4 / 51.1 | 179.69 | 52.9 / 52.2 | 160.03 | 54.3 / 54.0 | 151.61 | 55.6 / 54.8 |
| 12 | 194.80 | 50.9 / 50.7 | 184.21 | 52.3 / 51.7 | 163.27 | 53.9 / 53.7 | 155.08 | 55.1 / 54.5 |
| 13 | 198.60 | 50.5 / 50.3 | 188.19 | 51.8 / 51.3 | 166.07 | 53.7 / 53.5 | 158.11 | 54.7 / 54.2 |
| 14 | 201.85 | 50.2 / 50.0 | 191.72 | 51.4 / 51.0 | 168.52 | 53.4 / 53.2 | 160.78 | 54.3 / 53.9 |

* R-134a coils are not ARI certified.

## Evaporator capacity data

**Based on 80°F db/67° F wb entering air, 40° F saturated suction, 500 FPM coil face velocity. All capacity data based on 24" x 48" coil face area.**

| FPI | 6-ROW - 24" X 48" FACE AREA | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 174.14 | 53.8 / 52.7 | 163.46 | 55.4 / 53.7 | 147.44 | 56.3 / 55.2 | 139.47 | 57.7 / 55.9 |
| 7 | 183.14 | 52.6 / 51.8 | 172.51 | 54.1 / 52.8 | 153.99 | 55.4 / 54.6 | 146.29 | 56.7 / 55.3 |
| 8 | 190.43 | 51.6 / 51.1 | 180.03 | 53.1 / 52.1 | 159.16 | 54.6 / 54.1 | 151.80 | 55.8 / 54.8 |
| 9 | 196.41 | 50.9 / 50.5 | 186.33 | 52.3 / 51.5 | 163.30 | 54.1 / 53.7 | 156.32 | 55.2 / 54.4 |
| 10 | 201.36 | 50.3 / 50.0 | 191.66 | 51.6 / 51.0 | 166.76 | 53.6 / 53.4 | 160.07 | 54.6 / 54.0 |
| 11 | 205.50 | 49.8 / 49.6 | 196.21 | 51.0 / 50.6 | 170.93 | 53.2 / 53.0 | 163.22 | 54.2 / 53.7 |
| 12 | 208.93 | 49.5 / 49.3 | 200.12 | 50.5 / 50.2 | 175.32 | 52.8 / 52.6 | 165.89 | 53.8 / 53.5 |
| 13 | 212.10 | 49.2 / 49.0 | 203.51 | 50.1 / 49.8 | 179.14 | 52.4 / 52.2 | 168.18 | 53.5 / 53.3 |
| 14 | 215.50 | 48.8 / 48.6 | 206.47 | 49.7 / 49.5 | 182.49 | 52.1 / 51.9 | 171.72 | 53.1 / 52.9 |
| FPI | 8-ROW - 24" X 48" FACE AREA | | | | | | | |
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 197.10 | 50.9 / 50.5 | 188.44 | 52.2 / 51.3 | 160.43 | 54.5 / 54.0 | 155.17 | 55.4 / 54.5 |
| 7 | 204.00 | 50.1 / 49.8 | 195.84 | 51.2 / 50.6 | 164.50 | 53.9 / 53.6 | 159.71 | 54.7 / 54.0 |
| 8 | 209.31 | 49.4 / 49.2 | 201.67 | 50.4 / 50.0 | 171.76 | 53.1 / 52.9 | 163.18 | 54.2 / 53.7 |
| 9 | 215.69 | 48.8 / 48.6 | 206.37 | 49.8 / 49.5 | 178.73 | 52.5 / 52.3 | 166.70 | 53.7 / 53.4 |
| 10 | 221.15 | 48.2 / 48.0 | 210.54 | 49.3 / 49.1 | 184.51 | 51.9 / 51.7 | 172.81 | 53.0 / 52.8 |
| 11 | 225.74 | 47.8 / 47.6 | 215.32 | 48.8 / 48.6 | 189.42 | 51.4 / 51.2 | 178.10 | 52.5 / 52.3 |
| 12 | 229.66 | 47.3 / 47.1 | 219.58 | 48.4 / 48.2 | 193.61 | 51.0 / 50.8 | 182.63 | 52.1 / 51.9 |
| 13 | 233.02 | 47.0 / 46.8 | 223.23 | 48.0 / 47.8 | 197.24 | 50.7 / 50.5 | 186.60 | 51.7 / 51.5 |
| 14 | 235.99 | 46.7 / 46.5 | 226.49 | 47.7 / 47.5 | 200.40 | 50.3 / 50.1 | 190.10 | 51.4 / 51.2 |
| FPI | 10-ROW - 24" X 48" FACE AREA | | | | | | | |
| | R-22 | | | | R-134a* | | | |
| | HI-F5 SURFACE | | E-F5 SURFACE | | HI-F5 SURFACE | | E-F5 SURFACE | |
| | MBH | LVG. DB / WB | MBH | LVG. DB / WB | MBH | Lvg. DB / WB | MBH | Lvg. DB / WB |
| 6 | 218.96 | 48.5 / 48.3 | 208.83 | 49.7 / 49.3 | 188.52 | 51.5 / 51.3 | 178.62 | 52.8 / 52.3 |
| 7 | 227.18 | 47.6 / 47.4 | 217.47 | 48.7 / 48.4 | 196.59 | 50.7 / 50.5 | 186.80 | 51.8 / 51.5 |
| 8 | 233.67 | 46.9 / 46.7 | 224.42 | 47.9 / 47.7 | 203.00 | 50.1 / 49.9 | 193.67 | 51.0 / 50.8 |
| 9 | 238.82 | 46.4 / 46.2 | 230.09 | 47.3 / 47.1 | 208.18 | 49.6 / 49.4 | 199.22 | 50.5 / 50.3 |
| 10 | 243.17 | 45.9 / 45.7 | 234.77 | 46.8 / 46.6 | 212.43 | 49.1 / 48.9 | 203.86 | 50.0 / 49.8 |
| 11 | 246.68 | 45.5 / 45.3 | 238.68 | 46.4 / 46.2 | 215.96 | 48.8 / 48.6 | 207.78 | 49.6 / 49.4 |
| 12 | 249.63 | 45.2 / 45.0 | 241.98 | 46.0 / 45.8 | 218.93 | 48.5 / 48.3 | 211.12 | 49.3 / 49.1 |
| 13 | 252.11 | 44.9 / 44.7 | 244.79 | 45.7 / 45.5 | 221.46 | 48.2 / 48.0 | 214.00 | 49.0 / 48.8 |
| 14 | 254.23 | 44.7 / 44.5 | 247.25 | 45.4 / 45.2 | 223.62 | 48.0 / 47.8 | 216.51 | 48.7 / 48.5 |

* R-134a coils are not ARI certified.

## Distributor and suction connection size selection

Distributor, nozzle and suction connection selection is best accomplished by the use of SelectTOOLS™ for Contractor Coils selection program. The program output includes coil nomenclature that designates the distributor, nozzle and suction connection sizes. The 3-digit distributor code gives distributor selection information. The first digit designates the distributor tube size, either a 7 for 1/4 inch tubes or 8 for 5/16 inch tubes. The last two digits designate the number of circuits in the coil. The 2-digit nozzle code number gives the nozzle size required for the distributor and is also used to determine the suction connection size for the coil. Examples are listed in Table 5. Suction connections sizes for the various evaporator coil types are listed in Table 6. Evaporator coil circuiting availability is presented in Tables 7A and 7B. Liquid line (distributor) sizes are presented in Table 8.

**Table 5. Example rating distributor & nozzle information**

| INFORMATION | EXAMPLES |
|---|---|
| **DISTRIBUTOR:**<br>• FIRST DIGIT DESIGNATES DISTRIBUTOR TUBE SIZE.<br>• LAST TWO DIGITS DESIGNATE NUMBER OF CIRCUITS. | 715 |
| **NOZZLE:**<br>DIGITS DESIGNATE DISTRIBUTOR NOZZLE SIZE. | 17 |

**Table 6. Suction connection sizes**

| COIL TYPE | NO. OF CIRCUITS (NC)* | NOZZLE NO. | | |
|---|---|---|---|---|
| | | 01 thru 12 | 15 thru 25 | 30 thru 50 |
| 5EN | 2—30 | (1) 1-5/8 | (1) 2-1/8 | (1) 2-5/8 |
| | 32—54 | (2) 1-5/8 | (2) 2-1/8 | (2) 2-5/8 |
| 5ER | 4—60 | (2) 1-5/8 | (2) 2-1/8 | (2) 2-5/8 |
| | 64—72 | (4) 1-5/8 | (4) 2-1/8 | (2) 2-5/8 |
| 5EF | 5—54 | (2) 1-5/8 | (2) 2-1/8 | (4) 2-5/8 |
| 5EJ | 4—36 | (2) 1-5/8 | (2) 2-1/8 | (2) 2-5/8 |
| 5EK | 28—72 | (4) 1-5/8 | (4) 2-1/8 | (4) 2-5/8 |

**Table 7A. Circuiting availability**

| FIN HEIGHT (FH) | NUMBER OF CIRCUITS—Nc | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5EN AND 5EF COILS | | | | | | | | | | | | | | | | | | | | | | 5ER COILS | | |
| | 2 ROWS | | | 3 ROWS | | 4 ROWS | | | 5 ROWS | | | 6 ROWS | | | | | 8 ROWS | | | 10 ROWS | | | 6 ROWS | | | |
| 12 | 2 | 4 | 8+ | 2 | 4 | 2 | 4 | 8+ | 2 | 4 | 6+ | 2 | 4 | 6+ | 8+ | 12+ | 2 | 4 | 8+ | 2 | 4 | 8 | 4 | 8 | 12 | 16 |
| 15 | | 5+ | 10 | | 5+ | | 5+ | 10 | | 5+ | 8 | | 5+ | | 10 | 15 | | 5+ | 10 | | 5 | 10 | | 10 | 15 | 20 |
| 18 | 3 | 6 | 12 | 3 | 6 | 3 | 6 | 12 | 3 | 6 | 10 | 3 | 6 | 9 | 12 | 18 | 3 | 6 | 12 | 3 | 6 | 12 | 6 | 12 | 18 | 24 |
| 21 | | 7 | 14 | | 7 | | 7 | 14 | | 7 | 11 | | 7 | | 14 | 21 | | 7 | 14 | | | | | 14 | 21 | 28 |
| 24 | 4 | 8 | 16 | 4 | 8 | 4 | 8 | 16 | 4 | 8 | 13 | 4 | 8 | 12 | 16 | 24 | 4 | 8 | 16 | 4 | 8 | 16 | 8 | 16 | 24 | 32 |
| 27 | | 9 | 16 | | 9 | | 9 | 18 | | 9 | 15 | | 9 | | 18 | 27 | | 9 | 18 | | | | 9 | 18 | 27 | 36 |
| 30 | 5 | 10 | 20 | 5 | 10 | 5 | 10 | 20 | 5 | 10 | 16 | 5 | 10 | 15 | 20 | 30 | 5 | 10 | 20 | 5 | 10 | 20 | 10 | 20 | 30 | 40 |
| 33 | | 11 | 22 | | 11 | | 11 | 22 | | 11 | 18 | | 11 | | 22 | 33* | | 11 | 22 | | | | 11 | 22 | 33 | 44 |
| 36 | 6 | 12 | 24 | 6 | 12 | 6 | 12 | 24 | 6 | 12 | 20 | 6 | 12 | 18 | 24 | 36* | 6 | 12 | 24 | 6 | 12 | 24 | 12 | 24 | 36 | 48 |
| 39 | | 13 | 26 | | 13 | | 13 | 26 | | 13 | 21 | | 13 | | 26 | 39* | | 13 | 26 | | | | 13 | 26 | 39 | 52 |
| 42 | 7 | 14 | 28 | 7 | 14 | 7 | 14 | 28 | 7 | 14 | 23 | 7 | 14 | 21 | 28 | 42* | 7 | 14 | 28 | 7 | 14 | 28 | 14 | 28 | 42 | 56 |
| 45 | | 15 | 30 | | 15 | | 15 | 30 | | 15 | 25 | | 15 | | 30 | 45* | | 15 | 30 | | | | 15 | 30 | 45 | 60 |
| 48 | 8 | 16 | 32* | 8 | 16 | 8 | 16 | 32* | 8 | 16 | 26 | 8 | 16 | 24 | 32* | 48* | 8 | 16 | 32* | 8 | 16 | 32* | 16 | 32 | | 64 |
| 51 | | 17 | 34* | | 17 | | 17 | 34* | | 17 | 28 | | 17 | | 34* | 51* | | 17 | 34* | | | | | 34 | | 68 |
| 54 | | 18 | 36* | 9 | 18 | 9 | 18 | 36* | 9 | 18 | 30 | 9 | 18 | 27 | 36* | 54* | 9 | 18 | 36* | 9 | 18 | 36* | 18 | 36 | | 72 |

*These coils are normally furnished with two distributors for 5EN coils. See dimensional drawings on page 24.
+These coils are not available with universal connections
5EF coils available only in shaded area

**Table 7B.**

| FIN HEIGHT (FH) | NUMBER OF CIRCUITS — Nc | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5EJ COILS | | | | | | | | | | | 5EK COILS | |
| | 3 ROWS | | 4 ROWS | | | 6 ROWS | | | 8 ROWS | | | 4 ROWS | 8 ROWS |
| 21 | | 7 | | 7 | 14 | | 7 | 14 | | 7 | 14 | 28 | 28 |
| 24 | 4 | 8 | 4 | 8 | 16 | 4 | 8 | 16 | 4 | 8 | 16 | 32 | 32 |
| 27 | | 9 | | 9 | 18 | | 9 | 18 | | 9 | 18 | 36 | 36 |
| 30 | 5 | 10 | 5 | 10 | 20 | 5 | 10 | 20 | 5 | 10 | 20 | 40 | 40 |
| 33 | | 11 | | 11 | 22 | | 11 | 22 | | 11 | 22 | 44 | 44 |
| 36 | 6 | 12 | 6 | 12 | 24 | 6 | 12 | 24 | 6 | 12 | 24 | 48 | 48 |
| 39 | | 13 | | 13 | 26 | | 13 | 26 | | 13 | 26 | 52 | 52 |
| 42 | 7 | 14 | 7 | 14 | 28 | 7 | 14 | 28 | 7 | 14 | 28 | 56 | 56 |
| 45 | | 15 | | 15 | 30 | | 15 | 30 | | 15 | 30 | 60 | 60 |
| 48 | 8 | 16 | 8 | 16 | 32 | 8 | 16 | 32 | 8 | 16 | 32 | 64 | 64 |
| 51 | | 17 | | 17 | 34 | | 17 | 34 | | 17 | 34 | 68 | 68 |
| 54 | 9 | 18 | 9 | 18 | 36 | 9 | 18 | 36 | 9 | 18 | 36 | 72 | 72 |

**Table 8. Liquid connection (distributor) sizes**

| 5EN coils | | NUMBER OF CIRCUITS — Nc | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TUBE SIZE | 1/4" | 2 — 3 | 4 — 8 | 9 — 10 | 11 — 18 | 19 — 30 | 32 — 36 | 39 — 54 |
| | 5/16" | — | 2 — 6 | 7 — 8 | 9 — 15 | 16 — 30 | — | 32 — 54 |
| CONNECTION QTY. AND SIZE | | (1) 5/8 | (1) 7/8 | (1) 1-1/8 | (1) 1-3/8 | (1) 1-5/8 | (1) 1-3/8 | (1) 1-5/8 |

| 5EF coils | | NUMBER OF CIRCUITS — Nc | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| TUBE SIZE | 1/4" | 5 — 6 | 7 | — | 8 — 16 | — | 18 — 20 | 21 | 22 — 36 | 39 — 54 |
| | 5/16" | — | — | 5 — 7 | 8 — 12 | 13 | 14 — 16 | — | 18 — 30 | 32 — 54 |
| CONNECTION QTY. AND SIZE | | (2) 5/8 | (1) 5/8<br>(1) 7/8 | (2) 7/8 | (2) 7/8 | (1) 7/8<br>(1) 1-1/8 | (2) 1-1/8 | (1) 1-1/8<br>(1) 1-3/8 | (2) 1-3/8 | (2) 1-5/8 |

| 5EJ coils | | NUMBER OF CIRCUITS — Nc | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TUBE SIZE | 1/4" | 4 — 6 | 7 | 8 — 16 | 17 | 18 — 20 | — | 22 — 36 | — |
| | 5/16" | — | — | 4 — 12 | 13 | 14 — 16 | 17 | 18 — 30 | 32 — 36 |
| CONNECTION QTY. AND SIZE | | (2) 5/8 | (1) 5/8<br>(1) 7/8 | (2) 7/8 | (1) 7/8<br>(1) 1-1/8 | (2) 1-1/8 | (1) 1-1/8<br>(1) 1-3/8 | (2) 1-3/8 | (2) 1-5/8 |

| 5EK coils | | NUMBER OF CIRCUITS — Nc | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TUBE SIZE | 1/4" | 27 — 31 | — | 35 | 39 | 43 | 47 — 71 | — | — |
| | 5/16" | — | 27 | — | 31 | 35 | 39 — 59 | 63 | 67 — 71 |
| CONNECTION QTY. AND SIZE | | (4) 7/8 | (3) 1-1/8<br>(1) 7/8 | (3) 1-1/8<br>(1) 7/8 | (4) 1-3/8 | (3) 1-3/8<br>(1) 1-1/8 | (4) 1-3/8 | (3) 1-5/8<br>(1) 1-3/8 | (4) 1-5/8 |

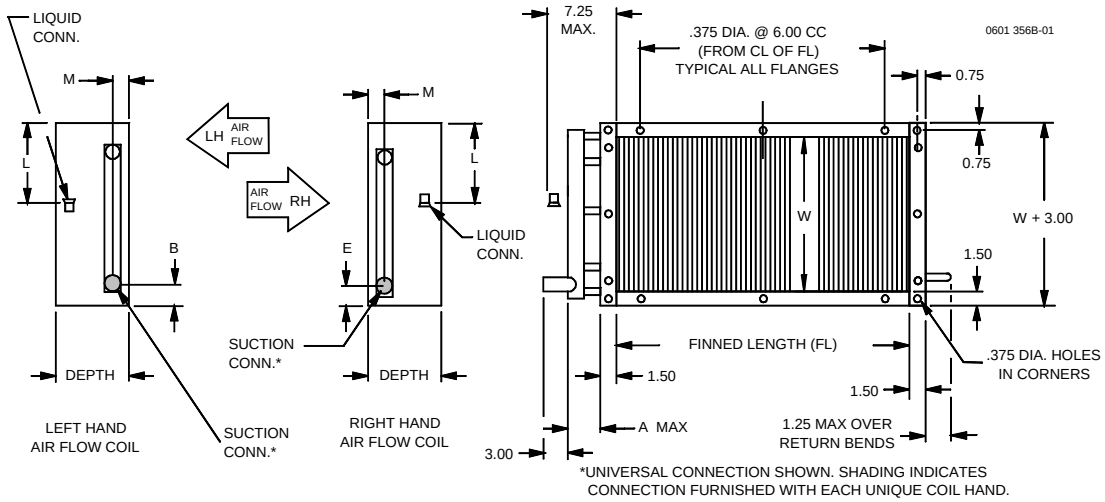
**5ER coils (06 rows only)**

| FH | 1/4" TUBE | | | | | | | | 5/16" TUBE | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Nc | Conns. | Nc | Conns. | Nc | Conns. | Nc | Conns. | Nc | Conns. | Nc | Conns. | Nc | Conns. | Nc | Conns. |
| 12 | 4 | (2) 5/8 | 8 | (2) 7/8 | 12 | (2) 7/8 | 16 | (2) 7/8 | 4 | (2) 7/8 | 8 | (2) 7/8 | 12 | (2) 7/8<br>(1) 1-1/8 | 16 | (2) 1-1/8 |
| 15 | — | — | 10 | (2) 7/8 | 15 | (1) 7/8<br>(1) 1-1/8 | 20 | (2) 7/8 | — | — | 10 | (2) 7/8 | 15 | (1) 7/8<br>(1) 1-3/8 | 20 | (2) 1-3/8 |
| 18 | 6 | (2) 5/8 | 12 | (2) 7/8 | 18 | (1) 7/8<br>(1) 1-3/8 | 24 | (2) 1-3/8 | 6 | (2) 7/8 | 12 | (2) 7/8 | 18 | (1) 7/8<br>(1) 1-3/8 | 24 | (2) 1-3/8 |
| 21 | — | — | 14 | (2) 7/8 | 21 | (1) 7/8<br>(1) 1-3/8 | 28 | (2) 1-3/8 | — | — | 14 | (2) 1-1/8 | 21 | (1) 1-1/8<br>(1) 1-3/8 | 28 | (2) 1-3/8 |
| 24 | 08 | (2) 7/8 | 16 | (2) 7/8 | 24 | (1) 7/8<br>(1) 1-3/8 | 32 | (2) 1-3/8 | 08 | (2) 7/8 | 16 | (2) 1-1/8 | 24 | (1) 1-1/8<br>(1) 1-5/8 | 32 | (2) 1-5/8 |
| 27 | 09 | (1) 5/8<br>(1) 7/8 | 18 | (2) 1-1/8 | 27 | (1) 1-1/8<br>(1) 1-3/8 | 36 | (2) 1-3/8 | 09 | (2) 7/8 | 18 | (2) 1-3/8 | 27 | (1) 1-3/8<br>(1) 1-5/8 | 36 | (2) 1-5/8 |
| 30 | 10 | (2) 7/8 | 20 | (2) 1-1/8 | 30 | (1) 1-1/8<br>(1) 1-5/8 | 40 | (2) 1-5/8 | 10 | (2) 7/8 | 20 | (2) 1-3/8 | 30 | (1) 1-3/8<br>(1) 1-5/8 | 40 | (2) 1-5/8 |
| 33 | 11 | (2) 7/8 | 22 | (2) 1-3/8 | 33 | (1) 1-3/8<br>(1) 1-5/8 | 44 | (2) 1-5/8 | 11 | (1) 7/8<br>(1) 1-1/8 | 22 | (2) 1-3/8 | 33 | (1) 1-3/8<br>(1) 1-5/8 | 44 | (2) 1-5/8 |
| 36 | 12 | (2) 7/8 | 24 | (2) 1-3/8 | 36 | (1) 1-3/8<br>(1) 1-5/8 | 48 | (2) 1-3/8 | 12 | (2) 7/8 | 24 | (2) 1-3/8 | 36 | (1) 1-3/8<br>(1) 1-5/8 | 48 | (2) 1-5/8 |
| 39 | 13 | (2) 7/8 | 26 | (2) 1-3/8 | 39 | (1) 1-3/8<br>(1) 1-5/8 | 52 | (2) 1-5/8 | 13 | (1) 7/8<br>(1) 1-1/8 | 26 | (2) 1-3/8 | 39 | (1) 1-3/8<br>(1) 1-5/8 | 52 | (2) 1-5/8 |
| 42 | 14 | (2) 7/8 | 28 | (2) 1-3/8 | 42 | (1) 1-3/8<br>(1) 1-5/8 | 56 | (2) 1-5/8 | 14 | (2) 1-1/8 | 28 | (2) 1-3/8 | 42 | (1) 1-3/8<br>(1) 1-5/8 | 56 | (2) 1-5/8 |
| 45 | 15 | (1) 7/8<br>(1) 1-1/8 | 30 | (2) 1-3/8 | 45 | (1) 1-3/8<br>(1) 1-5/8 | 60 | (2) 1-5/8 | 15 | (1) 7/8<br>(1) 1-3/8 | 30 | (2) 1-3/8 | 45 | (1) 1-3/8<br>(1) 1-5/8 | 60 | (2) 1-5/8 |
| 48 | 16 | (2) 7/8 | 32 | (2) 1-3/8 | — | — | 64 | (4) 1-3/8 | 16 | (2) 1-1/8 | 32 | (2) 1-5/8 | — | — | 64 | (4) 1-5/8 |
| 51 | — | — | 34 | (2) 1-3/8 | — | — | 68 | (4) 1-3/8 | — | — | 34 | (2) 1-5/8 | — | — | 68 | (4) 1-5/8 |
| 54 | 18 | (2) 1-1/8 | 36 | (2) 1-3/8 | — | — | 72 | (4) 1-3/8 | 18 | (2) 1-3/8 | 36 | (2) 1-5/8 | — | — | 72 | (4) 1-5/8 |

# Dimensional data

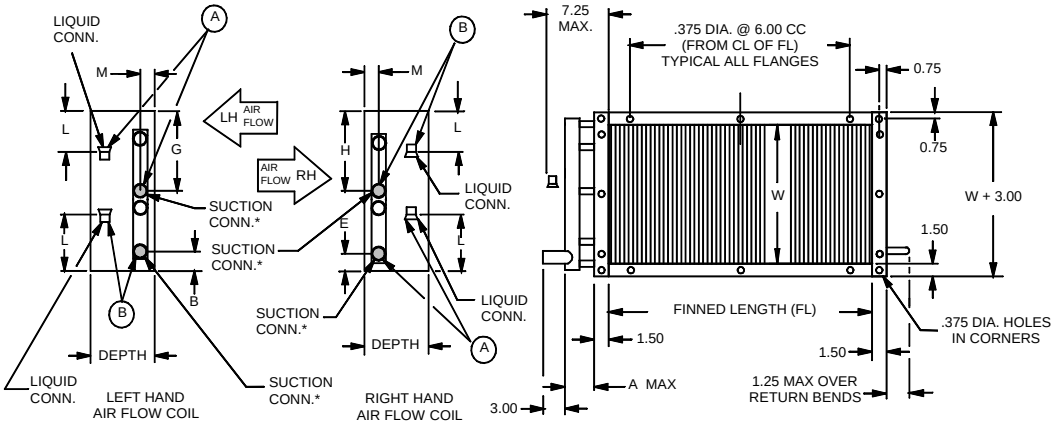
## 5EN Evaporator coils - 2 through 12 rows (12” to 54” FH)

### 5EN — 1/4 TO 1-1/2 SERPENTINE




*UNIVERSAL CONNECTION SHOWN. SHADING INDICATES CONNECTION FURNISHED WITH EACH UNIQUE COIL HAND.

### 5EN — 1-1/2 SERPENTINE 33” TO 54” FH




*UNIVERSAL CONNECTION SHOWN. SHADING INDICATES CONNECTION FURNISHED WITH EACH UNIQUE COIL HAND.

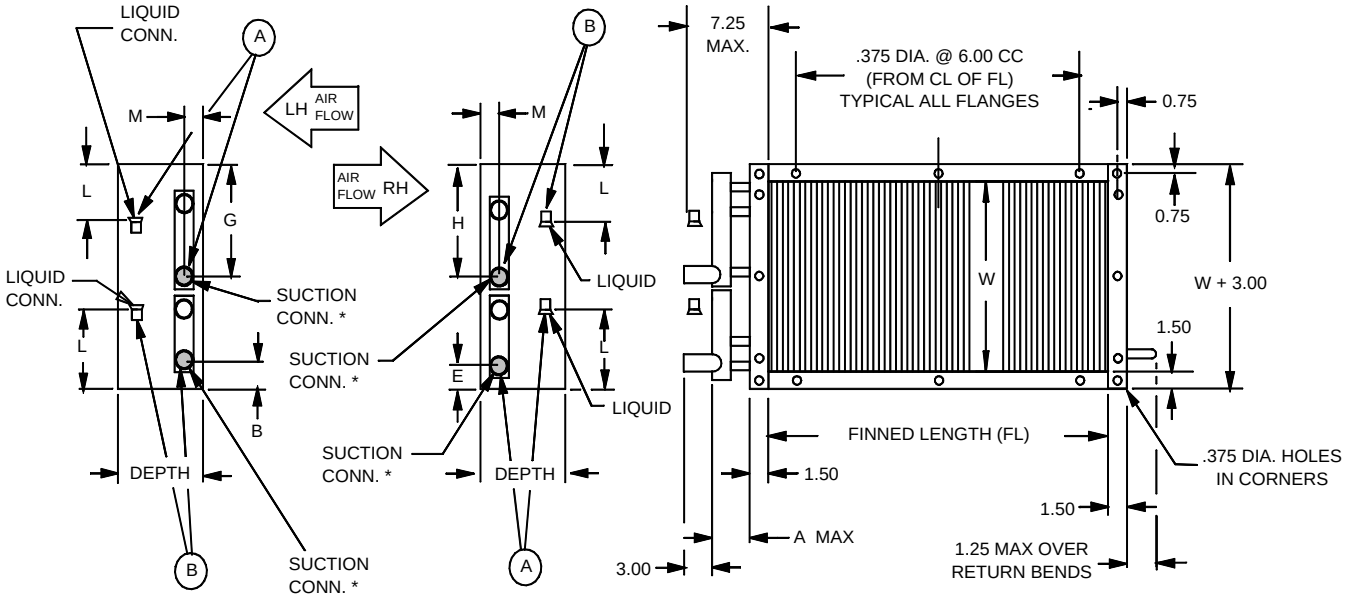
| SERPENTINE CIRCUIT | ROW | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| | DEPTH | 7.500 | 6.000 | 7.500 | 8.500 | 10.000 | 12.500 | 15.000 | 18.000 |
| 1/4 | M | 1.80 | 1.70 | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |
| 1/2 | M | 1.80 | 1.70 | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |
| 3/4 | M | N/A | N/A | N/A | N/A | 1.75 | N/A | N/A | N/A |
| 5/6 | M | N/A | N/A | N/A | 1.66 | N/A | N/A | N/A | N/A |
| 1/1 | M | 1.80 | N/A | 1.80 | N/A | 1.75 | 1.70 | 1.66 | 1.86 |
| 1-1/2 | M | N/A | N/A | N/A | N/A | 2.41 | N/A | N/A | N/A |

| SERPENTINE CIRCUIT | B | E | G | H | L | W |
|---|---|---|---|---|---|---|
| 1/4 2 ROW | 2.80 | 8.05 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 1/4 4-12 ROW | 5.80 | 5.05 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 1/2 | 2.80 | 5.05 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 3/4 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 54.00 ON 6.00 INCREMENTS |
| 5/6 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 1/1 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 1-1/2 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 30.00 |
| 1-1/2 | 2.80 | 3.55 | W ÷ 2 + 0.25 | W ÷ 2 - 1.25 | NOTE 6 | 33.00 - 54.00 |

**GENERAL NOTES:**

1. VERTICAL OR HORIZONTAL AIR FLOW MUST BE SPECIFIED.
2. CONNECT COILS FOR COUNTERFLOW, I.E., ENTERING LIQUID CONNECTION ON LEAVING AIR SIDE OF COIL.
3. CONNECTIONS ARE COPPER SWEAT.
4. ALL DIMENSIONS ARE IN INCHES.
5. CONNECTION LOCATION ± .125.
6. L = 1/4 OF WIDTH DIMENSION ± .250
7. .250 O.D. EQUALIZER LINE ON EACH HEADER.
8. (A) (B) INDICATES SUCTION HEADER AND LIQUID CONNECTION THAT ARE USED TOGETHER TO FORM A CIRCUIT.

# 5EF Evaporator coils - 2 through 12 rows (12” to 54”)




LEFT HAND AIR FLOW COIL

RIGHT HAND AIR FLOW COIL

*UNIVERSAL CONNECTION SHOWN. SHADING INDICATES CONNECTION FURNISHED WITH EACH UNIQUE COIL HAND.

| SERPENTINE CIRCUIT | ROW | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 |
|---|---|---|---|---|---|---|---|---|---|
| | DEPTH | 7.500 | 6.000 | 7.500 | 8.500 | 10.000 | 12.500 | 15.000 | 18.000 |
| 1/2 | M | 1.80 | 1.70 | 1.80 | 1.66 | 1.75 | 1.70 | 1.66 | 1.86 |
| 3/4 | M | N/A | N/A | N/A | N/A | 1.75 | N/A | N/A | N/A |
| 5/6 | M | N/A | N/A | N/A | 1.66 | N/A | N/A | N/A | N/A |
| 1/1 | M | 1.80 | N/A | 1.80 | N/A | 1.75 | 1.70 | 1.66 | 1.86 |
| 1-1/2 | M | N/A | N/A | N/A | N/A | 2.41 | N/A | N/A | N/A |

| SERPENTINE CIRCUIT | B | E | G | H | L | W |
|---|---|---|---|---|---|---|
| 1/2 | 2.80 | 5.05 | N/A | N/A | NOTE 6 | 15.00 - 54.00 |
| 3/4 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 54.00 ON 6.00 INCREMENTS |
| 5/6 | 2.80 | 3.55 | N/A | N/A | NOTE 6 | 12.00 - 54.00 |
| 1/1 | 2.80 | 3.55 | W ÷ 2 +0.20 | W ÷ 2 -0.53 | NOTE 6 | 12.00 - 54.00 |
| 1-1/2 | 2.80 | 3.55 | W ÷ 2 +0.25 | W ÷ 2 -1.25 | NOTE 6 | 12.00 - 54.00 |

**GENERAL NOTES:**

1. VERTICAL OR HORIZONTAL AIR FLOW MUST BE SPECIFIED.
2. CONNECT COILS FOR COUNTERFLOW, I.E., ENTERING LIQUID CONNECTION ON LEAVING AIR SIDE OF COIL.
3. CONNECTIONS ARE COPPER SWEAT.
4. ALL DIMENSIONS ARE IN INCHES.
5. CONNECTION LOCATION ± .125.
6. L = 1/4 OF WIDTH DIMENSION ± .250
7. .250 O.D. EQUALIZER LINE ON EACH HEADER.
8. (A) (B) INDICATES SUCTION HEADER AND LIQUID CONNECTION THAT ARE USED TOGETHER TO FORM A CIRCUIT.

### 1/2 SERPENTINE

| DIMENSIONS | W DIMENSIONS | CALCULATIONS |
|---|---|---|
| G | 18.00 + 6.00 | W ÷ 2 +0.20 |
| | 15.00 + 6.00 | W ÷ 2 +1.70 |
| H | 18.00 + 6.00 | W ÷ 2 -2.05 |
| | 15.00 + 6.00 | W ÷ 2 -3.55 |

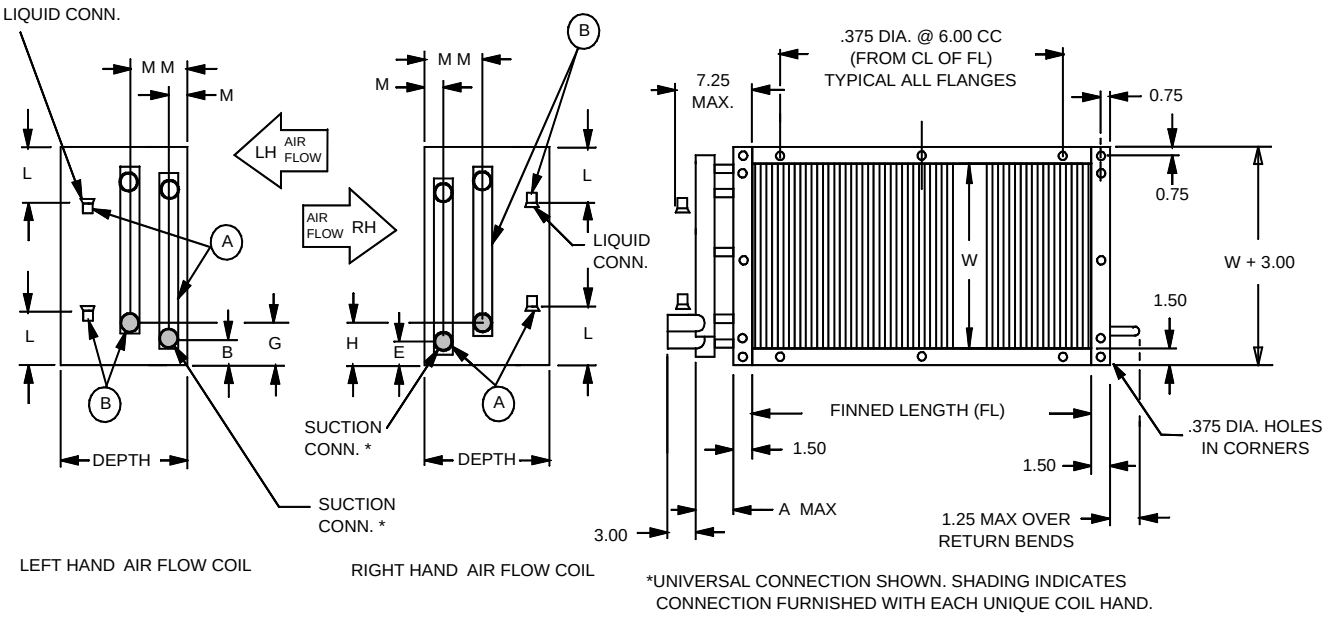
### 3/4 SERPENTINE

| DIMENSIONS | W DIMENSIONS | CALCULATIONS |
|---|---|---|
| G | 12.00 + 12.00 | W ÷ 2 +0.20 |
| | 18.00 + 12.00 | W ÷ 2 +1.70 |
| H | 12.00 + 12.00 | W ÷ 2 -0.55 |
| | 18.00 + 12.00 | W ÷ 2 -2.05 |

### 5/6 SERPENTINE

| DIMENSIONS | W DIMENSIONS | CALCULATIONS |
|---|---|---|
| G | 12.00, 15.00, 18.00, 30.00, 33.00, 36.00, 48.00, 51.00, 54.00 | W ÷ 2 +0.20 |
| | 21.00, 24.00, 27.00, 39.00, 42.00, 45.00 | W ÷ 2 +1.70 |
| H | 12.00, 15.00, 18.00, 30.00, 33.00, 36.00, 48.00, 51.00, 54.00 | W ÷ 2 -0.55 |
| | 21.00, 24.00, 27.00, 39.00, 42.00, 45.00 | W ÷ 2 -2.05 |

# 5EJ Evaporator coils - 3 through 10 rows (12” to 54” FH)



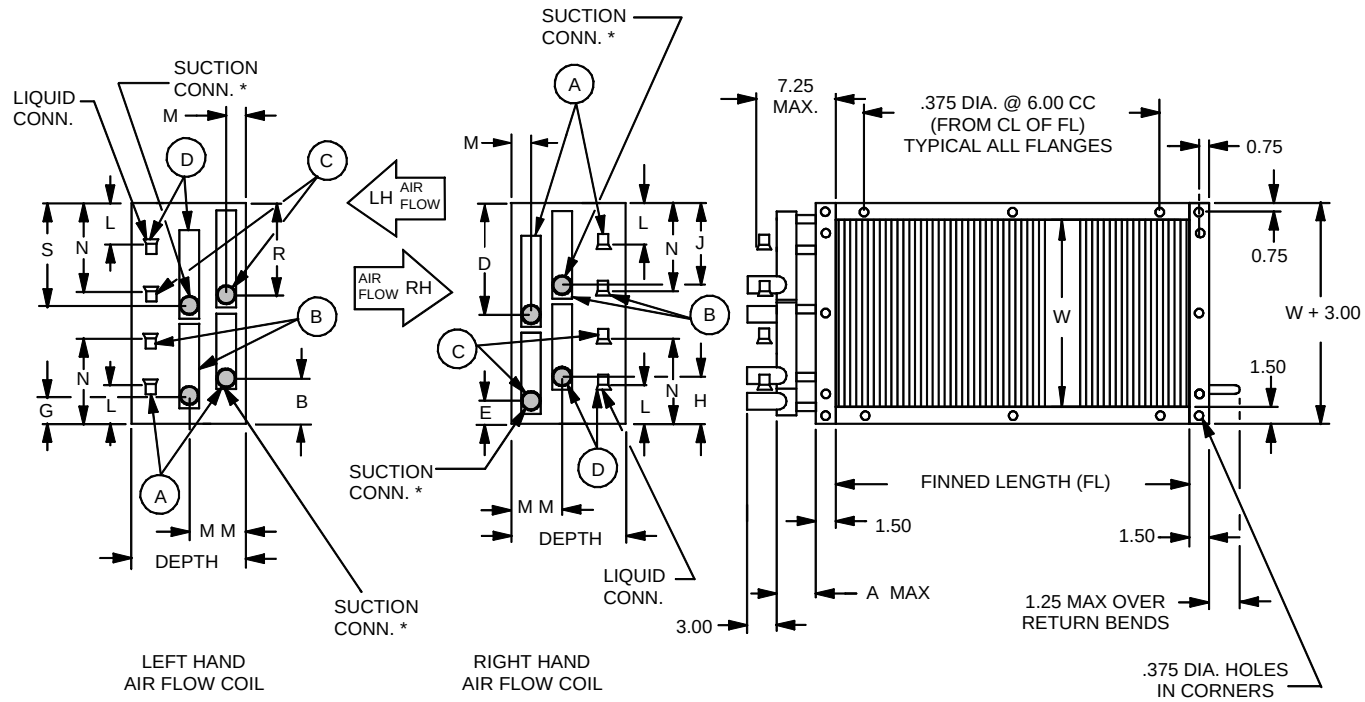

| SERPENTINE CIRCUIT | ROW | 3 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|---|
| | DEPTH | 8.500 | 8.500 | 10.000 | 12.500 | 15.000 |
| 1/8 - 1/8 | M | 1.66 | 1.66 | 1.75 | 1.70 | 1.63 |
| | M M | 4.91 | 4.91 | 5.00 | 4.95 | 4.86 |
| 1/4 - 1/4 | M | 1.66 | 1.66 | 1.75 | 1.70 | 1.63 |
| | M M | 4.91 | 4.91 | 5.00 | 4.96 | 4.88 |
| 1/2 - 1/2 | M | N/A | 1.66 | 1.75 | 1.70 | 1.63 |
| | M M | N/A | 4.91 | 5.00 | 4.95 | 4.88 |

| SERPENTINE CIRCUIT | W DIMENSIONS | B | E | G | H | L | W |
|---|---|---|---|---|---|---|---|
| 1/8 - 1/8 | 24.00 + 12.00 | 2.80 | 14.05 | 8.80 | 8.05 | NOTE 6 | 24.00, 36.00, 48.00 |
| | 30.00 + 12.00 | 2.80 | 8.05 | 8.80 | 14.05 | NOTE 6 | 30.00, 42.00, 54.00 |
| 1/4 - 1/4 | 12.00 + 6.00 | 2.80 | 8.05 | 5.80 | 5.05 | NOTE 6 | 12.00 - 54.00 |
| | 15.00 + 6.00 | 2.80 | 5.05 | 5.80 | 8.05 | NOTE 6 | 15.00 - 51.00 |
| 1/2 - 1/2 | N/A | 2.80 | 5.05 | 4.30 | 3.55 | NOTE 6 | 12.00 - 54.00 |

**GENERAL NOTES:**

1. VERTICAL OR HORIZONTAL AIR FLOW MUST BE SPECIFIED.
2. CONNECT COILS FOR COUNTERFLOW, I.E., ENTERING LIQUID CONNECTION ON LEAVING AIR SIDE OF COIL.
3. CONNECTIONS ARE COPPER SWEAT.
4. ALL DIMENSIONS ARE IN INCHES.
5. CONNECTION LOCATION ± .125.
6. L = 1/4 OF WIDTH DIMENSION ± .250
7. .250 O.D. EQUALIZER LINE ON EACH HEADER.
8. (A) (B) INDICATES SUCTION HEADER AND LIQUID CONNECTION THAT ARE USED TOGETHER TO FORM A CIRCUIT.
9. UNIVERSAL CONNECTIONS NOT AVAILABLE ON 12.00” & 15.00” FIN HEIGHT.

## 5EK Evaporator coils - 4 & 8 row (15” to 54” FH)




*UNIVERSAL CONNECTION SHOWN. SHADING INDICATES CONNECTION FURNISHED WITH EACH UNIQUE COIL HAND.

| SERPENTINE CIRCUIT | ROW | 4 | 8 |
|---|---|---|---|
| | DEPTH | 8.500 | 12.500 |
| 1/1 - 1/1 | M | 1.63 | 1.69 |
| | M M | 4.88 | 4.94 |

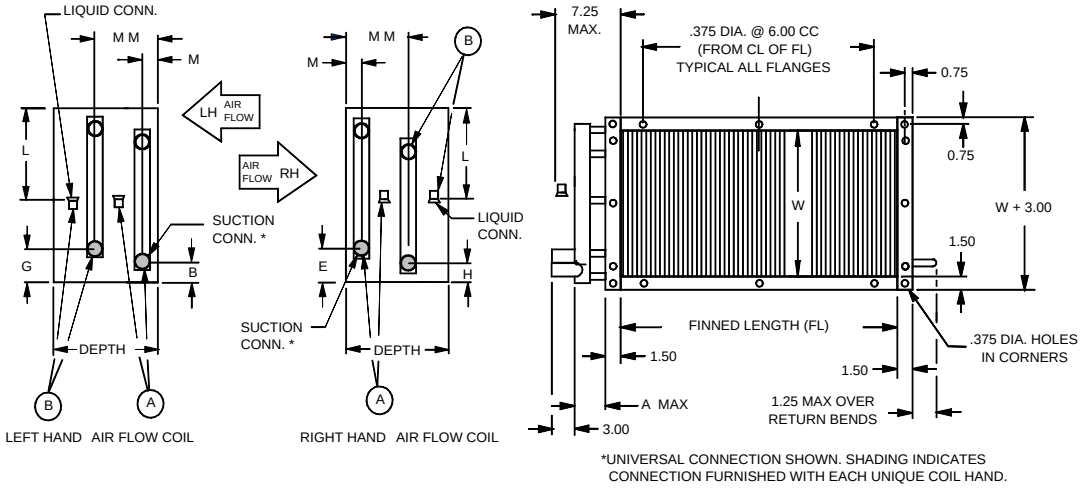
| SERPENTINE CIRCUIT | B | D | E | G | H | J | L | N | R | S | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/1 - 1/1 | 2.81 | FH ÷ 2 -.55 | 3.55 | 3.55 | 2.81 | FH ÷ 2 +.22 | NOTE 6 | NOTE 7 | FH ÷ 2 +.22 | FH ÷ 2 -.55 | 15.00 - 54.00 |

**GENERAL NOTES:**

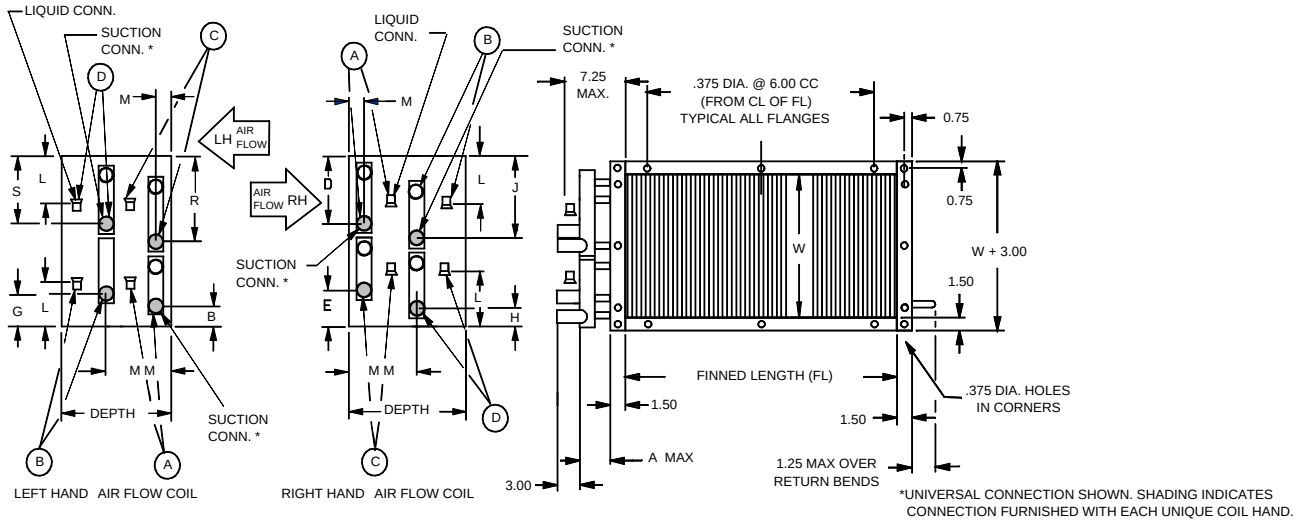
1. VERTICAL OR HORIZONTAL AIR FLOW MUST BE SPECIFIED.
2. CONNECT COILS FOR COUNTERFLOW, I.E., ENTERING LIQUID CONNECTION ON LEAVING AIR SIDE OF COIL.
3. CONNECTIONS ARE COPPER SWEAT.
4. ALL DIMENSIONS ARE IN INCHES.
5. CONNECTION LOCATION ± .125.
6. L = 1/6 OF WIDTH DIMENSION ± .250
7. L = 1/3 OF WIDTH DIMENSION ± .250
8. .250 O.D. EQUALIZER LINE ON EACH HEADER.
9. (A) (B) (C) (D) INDICATES SUCTION HEADER AND LIQUID CONNECTION THAT ARE USED TOGETHER TO FORM A CIRCUIT.
10. UNIVERSAL CONNECTIONS NOT AVAILABLE ON 15.00” & 18.00” FIN HEIGHT.

# 5ER Evaporator coils - 6 row (12” to 54” FH)

## 5ER — 1/6 TO 1/1 SERPENTINE




## 5ER — 1/1 SERPENTINE - 48” TO 54” FH




| SERPENTINE CIRCUIT | ROW | 6 |
|---|---|---|
| | DEPTH | 10.000 |
| 1/4 - 1/4 | M | 1.75 |
| | M M | 5.66 |
| 1/6 - 1/3 | M | 1.75 |
| | M M | 5.66 |
| 1/5 - 1/3 | M | 1.75 |
| | M M | 5.66 |
| 1/2 - 1/2 | M | 1.75 |
| | M M | 5.66 |
| 1/2 - 1/1 | M | 1.75 |
| | M M | 5.66 |
| 1/1 - 1/1 | M | 1.75 |
| | M M | 5.66 |

**GENERAL NOTES:**

1. VERTICAL OR HORIZONTAL AIR FLOW MUST BE SPECIFIED.
2. CONNECT COILS FOR COUNTERFLOW, I.E., ENTERING LIQUID CONNECTION ON LEAVING AIR SIDE OF COIL.
3. CONNECTIONS ARE COPPER SWEAT.
4. ALL DIMENSIONS ARE IN INCHES.
5. CONNECTION LOCATION ± .125.
6. L = 1/4 OF WIDTH DIMENSION ± .250
7. .250 O.D. EQUALIZER LINE ON EACH HEADER.
8. (A) (B) (C) (D) INDICATES SUCTION HEADER AND LIQUID CONNECTION THAT ARE USED TOGETHER TO FORM A CIRCUIT.

| SERPENTINE CIRCUIT | B | D | E | G | H | J | L | R | S | W |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 - 1/4 | 5.80 | N/A | 5.04 | 6.54 | 4.30 | N/A | NOTE 6 | N/A | N/A | 12.00 - 54.00 ON 6.00 INCREMENTS |
| 1/6 - 1/3 | 5.80 | N/A | 8.05 | 3.55 | 5.80 | N/A | NOTE 6 | N/A | N/A | 27.00 & 45.00 |
| 1/5 - 1/3 | 7.30 | N/A | 8.05 | 5.05 | 5.80 | N/A | NOTE 6 | N/A | N/A | 33.00 |
| | 5.80 | N/A | 8.05 | 6.55 | 5.80 | N/A | NOTE 6 | N/A | N/A | 39.00 |
| 1/2 - 1/2 | 2.80 | N/A | 5.05 | 3.55 | 4.30 | N/A | NOTE 6 | N/A | N/A | 12.00 - 54.00 |
| 1/2 - 1/1 | 2.80 | N/A | 5.05 | 3.55 | 2.80 | N/A | NOTE 6 | N/A | N/A | 12.00 - 45.00 |
| 1/1 - 1/1 | 2.80 | N/A | 3.55 | 3.55 | 2.80 | N/A | NOTE 6 | N/A | N/A | 12.00 - 45.00 |
| | 2.80 | FH ÷ 2 -.53 | 3.55 | 3.55 | 2.80 | FH ÷ 2 +.19 | NOTE 6 | FH ÷ 2 +.19 | FH ÷ 2 -.53 | 48.00 - 54.00 |

# Conversion of air volume to standard air

When the specified air volume (CFM) is given at any temperature other than 70° F or any altitude other than sea level, these charts should be used for correction before using the capacity and pressure drop tables which are based on CFM at standard air conditions.

**EXAMPLE:**
To convert 15,900 CFM of air at 95°F and at 3,000 feet altitude to standard conditions:

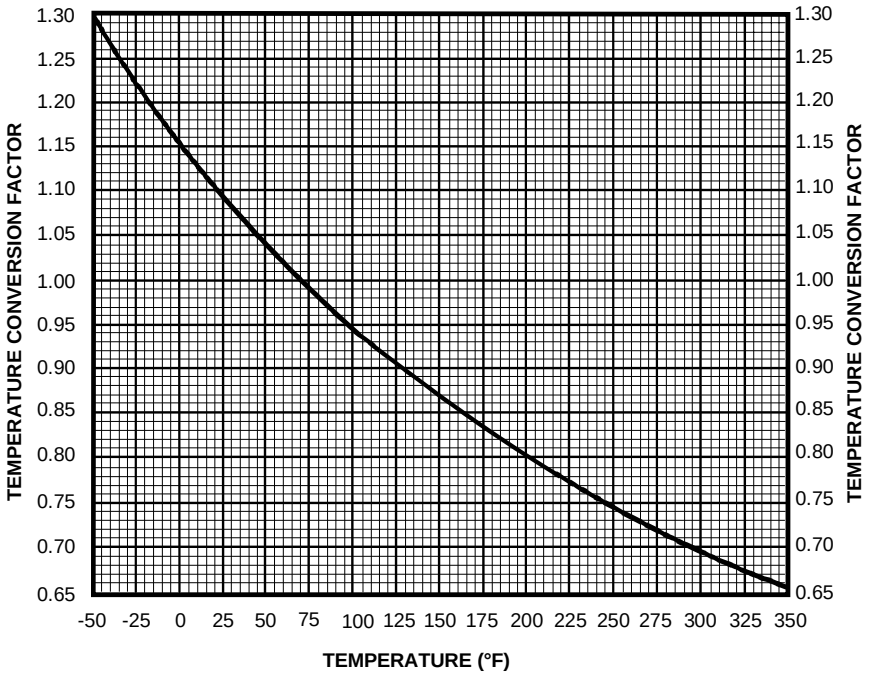
*CFM of Standard Air*
= *(CFM of Specified Air x $F_T$ x $F_A$*
= *15,900 x 0.955 x 0.896*
= *13.600*

*Where:*
$F_T$ = *Temperature Conversion Factor*
$F_A$ = *Altitude Conversion Factor*

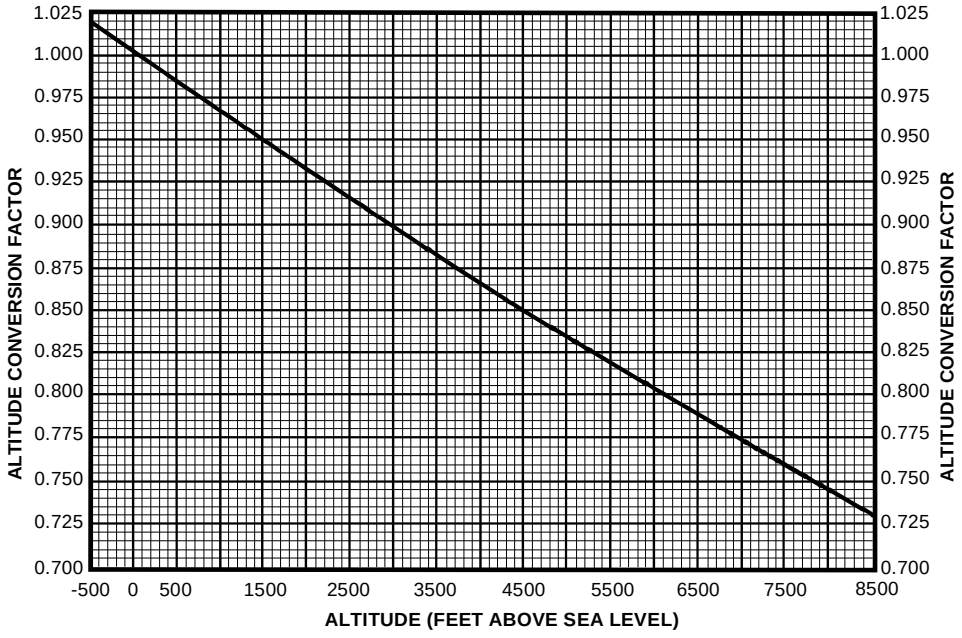
The CFM of standard air should be used to determine face velocity through the coil, which in turn is used to determine heat transfer values, and the air pressure drop through the coil.
The air pressure drop value taken from Figures 1 and 2 must be converted to altitude to be used for static pressure calculations. To convert the air pressure drop from standard air at sea level to the air pressure drop at altitude use the following equation:

$$\text{Pressure Drop at Altitude} = \frac{\text{Pressure Drop at Sea Level}}{F_T \times F_A}$$

**TEMPERATURE CONVERSION FACTOR - $F_T$**




**ALTITUDE CONVERSION FACTOR - $F_A$**



# Total heat (enthalpy)

## HEAT CONTENT (BTU) OF 1 LB. OF DRY AIR SATURATED WITH WATER VAPOR
## (Standard atmospheric pressure 29.921 inches Hg)

| WET BULB (°F) | TENTHS OF DEGREES | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | .0 | .1 | .2 | .3 | .4 | .5 | .6 | .7 | .8 | .9 |
| **35** | 13.01 | 13.05 | 13.09 | 13.14 | 13.18 | 13.22 | 13.27 | 13.31 | 13.35 | 13.39 |
| **36** | 13.44 | 13.48 | 13.52 | 13.57 | 13.61 | 13.66 | 13.70 | 13.74 | 13.79 | 13.83 |
| **37** | 13.87 | 13.92 | 13.96 | 14.01 | 14.05 | 14.10 | 14.14 | 14.19 | 14.23 | 14.27 |
| **38** | 14.32 | 14.36 | 14.41 | 14.45 | 14.50 | 14.54 | 14.59 | 14.63 | 14.68 | 14.73 |
| **39** | 14.77 | 14.82 | 14.86 | 14.91 | 14.95 | 15.00 | 15.05 | 15.09 | 15.14 | 15.18 |
| **40** | 15.23 | 15.28 | 15.32 | 15.37 | 15.42 | 15.46 | 15.51 | 15.56 | 15.60 | 15.65 |
| **41** | 15.70 | 15.74 | 15.79 | 15.84 | 15.89 | 15.93 | 15.98 | 16.03 | 16.08 | 16.12 |
| **42** | 16.17 | 16.22 | 16.27 | 16.32 | 16.37 | 16.41 | 16.46 | 16.51 | 16.56 | 16.61 |
| **43** | 16.66 | 16.71 | 16.75 | 16.80 | 16.85 | 16.90 | 16.95 | 17.00 | 17.05 | 17.10 |
| **44** | 17.15 | 17.20 | 17.25 | 17.30 | 17.35 | 17.40 | 17.45 | 17.50 | 17.55 | 17.60 |
| **45** | 17.65 | 17.70 | 17.75 | 17.80 | 17.85 | 17.91 | 17.96 | 18.01 | 18.06 | 18.11 |
| **46** | 18.16 | 18.21 | 18.26 | 18.32 | 18.37 | 18.42 | 18.47 | 18.52 | 18.58 | 18.63 |
| **47** | 18.68 | 18.73 | 18.79 | 18.84 | 18.89 | 18.95 | 19.00 | 19.05 | 19.10 | 19.16 |
| **48** | 19.21 | 19.26 | 19.32 | 19.37 | 19.43 | 19.48 | 19.53 | 19.59 | 19.64 | 19.70 |
| **49** | 19.75 | 19.81 | 19.86 | 19.92 | 19.97 | 20.03 | 20.08 | 20.14 | 20.19 | 20.25 |
| **50** | 20.30 | 20.36 | 20.41 | 20.47 | 50.52 | 20.58 | 20.64 | 20.69 | 20.75 | 20.81 |
| **51** | 20.86 | 20.92 | 20.98 | 21.03 | 21.09 | 21.15 | 21.21 | 21.26 | 21.32 | 21.38 |
| **52** | 21.44 | 21.49 | 21.55 | 21.61 | 21.67 | 21.73 | 21.79 | 21.84 | 21.90 | 21.96 |
| **53** | 22.02 | 22.08 | 22.14 | 22.20 | 22.26 | 22.32 | 22.38 | 22.44 | 22.50 | 22.56 |
| **54** | 22.61 | 22.68 | 22.74 | 22.80 | 22.86 | 22.92 | 22.98 | 23.04 | 23.10 | 23.16 |
| **55** | 23.22 | 23.28 | 23.34 | 23.41 | 23.47 | 23.53 | 23.59 | 23.65 | 23.72 | 23.78 |
| **56** | 23.84 | 23.90 | 23.97 | 24.03 | 24.10 | 24.16 | 24.22 | 24.29 | 24.35 | 24.42 |
| **57** | 24.48 | 24.54 | 24.61 | 24.67 | 24.74 | 24.80 | 24.86 | 24.93 | 24.99 | 25.06 |
| **58** | 25.12 | 25.19 | 25.25 | 25.32 | 25.38 | 25.45 | 25.52 | 25.58 | 25.65 | 25.71 |
| **59** | 25.78 | 25.85 | 25.92 | 25.98 | 26.05 | 26.12 | 26.19 | 26.26 | 26.32 | 26.39 |
| **60** | 26.46 | 26.53 | 26.60 | 26.67 | 26.74 | 26.80 | 26.87 | 26.94 | 27.01 | 27.08 |
| **61** | 27.15 | 27.22 | 27.29 | 27.36 | 27.43 | 27.50 | 27.57 | 27.64 | 27.71 | 27.78 |
| **62** | 27.85 | 27.92 | 27.99 | 28.07 | 28.14 | 28.21 | 28.28 | 28.35 | 28.43 | 28.50 |
| **63** | 28.57 | 28.64 | 28.72 | 28.79 | 28.87 | 28.94 | 29.01 | 29.09 | 29.16 | 29.24 |
| **64** | 29.31 | 29.83 | 29.46 | 29.53 | 29.61 | 29.68 | 29.76 | 29.83 | 29.91 | 29.98 |
| **65** | 30.06 | 30.16 | 30.21 | 30.29 | 30.37 | 30.44 | 30.52 | 30.60 | 30.68 | 30.75 |
| **66** | 30.83 | 30.91 | 30.99 | 31.07 | 31.15 | 31.22 | 31.30 | 31.38 | 31.46 | 31.54 |
| **67** | 31.62 | 31.70 | 31.78 | 31.86 | 31.94 | 32.02 | 32.10 | 32.18 | 32.26 | 32.34 |
| **68** | 32.42 | 32.50 | 32.59 | 32.67 | 32.75 | 32.83 | 32.92 | 33.00 | 33.08 | 33.17 |
| **69** | 33.25 | 33.33 | 33.42 | 33.50 | 33.59 | 33.67 | 33.75 | 33.84 | 33.92 | 34.00 |
| **70** | 34.09 | 34.18 | 34.26 | 34.35 | 34.43 | 34.52 | 34.61 | 34.69 | 34.79 | 34.86 |
| **71** | 34.95 | 35.04 | 35.13 | 35.21 | 35.30 | 35.39 | 35.48 | 35.57 | 35.65 | 35.74 |
| **72** | 35.83 | 35.92 | 36.01 | 36.10 | 36.19 | 36.28 | 36.38 | 36.47 | 36.56 | 36.65 |
| **73** | 39.74 | 36.83 | 36.92 | 37.02 | 37.11 | 37.20 | 37.29 | 37.38 | 37.48 | 37.57 |
| **74** | 37.66 | 37.75 | 37.85 | 37.94 | 38.04 | 38.13 | 38.23 | 38.32 | 38.42 | 38.51 |
| **75** | 38.61 | 38.71 | 38.80 | 38.90 | 39.00 | 39.09 | 39.19 | 39.28 | 39.38 | 39.47 |
| **76** | 39.57 | 39.67 | 39.77 | 39.87 | 39.88 | 40.07 | 40.17 | 40.27 | 40.37 | 40.47 |
| **77** | 40.57 | 40.67 | 40.77 | 40.87 | 40.97 | 41.07 | 41.18 | 41.28 | 41.38 | 41.48 |
| **78** | 41.58 | 41.68 | 41.79 | 41.89 | 42.00 | 42.10 | 42.20 | 42.31 | 42.41 | 42.52 |
| **79** | 42.62 | 42.73 | 42.83 | 42.94 | 43.05 | 43.15 | 43.26 | 43.37 | 43.48 | 43.58 |
| **80** | 43.69 | 43.80 | 43.91 | 44.02 | 44.13 | 44.23 | 44.34 | 44.45 | 44.56 | 44.67 |
| **81** | 44.78 | 44.89 | 45.00 | 45.12 | 45.23 | 45.34 | 45.45 | 45.56 | 45.68 | 45.79 |
| **82** | 45.90 | 46.01 | 46.13 | 46.24 | 46.36 | 46.47 | 46.58 | 46.70 | 46.81 | 46.93 |
| **83** | 47.04 | 47.16 | 47.28 | 47.39 | 47.51 | 47.63 | 47.75 | 47.87 | 47.98 | 48.10 |
| **84** | 48.22 | 48.34 | 48.46 | 48.58 | 48.70 | 48.82 | 48.95 | 49.07 | 49.19 | 49.31 |
| **85** | 49.43 | 49.55 | 49.68 | 49.80 | 49.92 | 50.04 | 50.17 | 50.29 | 50.41 | 50.54 |

NOTE: Use wet bulb temperature only in determining total heat.
Compiled from data in ASHRAE Handbook of Fundamentals 2001.

## General Formulas

**TOTAL BTUH:**
*Total BTUH = 4.5 X SCFM X (Total Heat Ent. Air - Total Heat Lvg. Air)*

Where: 4 .5 = Density Std. Air x Min. / hr.
Density Std. Air = .075 lbs / cu. ft.
Minutes/hr. = 60

**SENSIBLE TOTAL RATIO:** $S/T\ Ratio. = \frac{Sensible\ BTUH}{Total\ BTUH}$

**SENSIBLE BTUH:**
*Sensible BTUH = 1.09 x SCFM x (Ent. Air DB - Lvg. Air DB)*

Where: 1.09 = (Specific heat of air at 70° F) x (Min/hr.)
x Density Std. Air
Specific heat of air = .242 at 70° F
Min./hr. = 60
Density Std. Air = .075 lbs. / cu ft.

# Engineering guide specifications

Furnish and install as shown on the plans and as described in the tabulated specifications, McQuay ARI certified water cooling coils 5W or evaporator coils 5E. The coil shall be of extended surface, staggered tube, rippled plate fin type. Coil performance shall be substantiated by computer generated output data.

**PRIMARY SURFACE:** The primary surface shall be round seamless (5/8“ O.D.) copper tube on 1-1/2” centers, staggered in the direction of airflow. All joints shall be brazed.

**SECONDARY SURFACE:** The secondary surface shall consist of rippled aluminum plate fins for higher capacity and structural strength. Fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Bare copper tube shall not be visible between fins. Tubes shall be mechanically expanded into the fins to provide a continuous primary to secondary compression bond over the entire finned length for maximum heat transfer rates.

**CASINGS:** Casings shall be constructed of continuous galvanized steel with 3/8” diameter bolt holes for mounting on 6” centers. Coil side plates shall be of reinforced flange type.

**COILS:** Coils shall have the connections located to permit (unique) (universal) mounting of the coil for right- or left-hand airflow and have equal pressure drop through all circuits. Coils shall be circuited for counterflow heat transfer to provide the maximum mean effective temperature difference for maximum heat transfer rates. All coils over 45” FL shall be furnished with 4 fin angles to properly position the coil core.

**WATER COILS**: Headers on water coils shall be seamless copper tubing. The headers shall have intruded tube holes to provide large brazing surface for maximum strength and inherent flexibility.
The complete 5W coil core shall be tested with 315 pounds air pressure under warm water and be suitable for operation at 250 psig working pressures. Individual tube test and core tests before installation of headers is not considered satisfactory. Hydrostatic tests alone will not be acceptable. Water cooling coils shall be circuited for drainability and for service without removing individual plugs from each tube.

**EVAPORATOR COILS:** Evaporator coils shall be tested with 315 pounds air pressure under warm water, and be suitable for 250 psig working pressure. Coils hydrostatically tested will not be permitted. Coils shall be ARI certified and Underwriters’ Laboratories recognized. All coils shall be circuited in a counterflow manner with uniform circuits.

**BRASS LIQUID DISTRIBUTORS:** Distributors factory mounted of the pressure type, will be furnished. Loading per circuit must be such that the refrigerant pressure drop is within reasonable limits to prevent loss of coil capacity.

**EVAPORATOR CAPACITIES:** Capacities shall be as outlined in the tabulation with _____°F suction temperature for refrigerant R_____

## Suggested Coil Tabulation

| SYSTEM | APPLICATION. | ARRANGEMENT | | COIL TYPE | FIN SERIES | ROWS | FACE AREA | FIN HEIGHT | FINNED LENGTH | CFM |
|---|---|---|---|---|---|---|---|---|---|---|
| | | WIDE | HIGH | | | | | | | |
| | | | | | | | | | | |

| CFM | ENT. AIR WB. °F | LVG. AIR WB °F | GPM | ENT. WATER °F | REF SUCT. TEMP °F | LVG. WATER °F | TOTAL BTUH | SENS. BTUH | WATER P.D. FT. | AIR P.D. IN |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |

# Notes

**McQuay Training and Development**

Now that you have made an investment in modern, efficient McQuay equipment, its care should be a high priority. For training information on all McQuay HVAC products, please visit us at www.mcquay.com and click on training, or call 540-248-9646 and ask for the Training Department.

***Warranty***

All McQuay equipment is sold pursuant to its standard terms and conditions of sale, including Limited Product Warranty. Consult your local McQuay Representative for warranty details. Refer to Form 933-43285Y. To find your local McQuay Representative, go to www.mcquay.com.

This document contains the most current product information as of this printing. For the most up-to-date product information, please go to www.mcquay.com.

McQuay®
Air Conditioning

© 2006 McQuay International • www.mcquay.com • 800-432-1342