

## COIL DIMENSION GUIDELINES

### L - CONNECTION LENGTH

- Coil connections are typically copper or steel. Copper connections can be made any length down to a certain minimum.
- Steel Connections have fixed lengths as shown in the chart below.
  - Standard connection types for various Precision Coils
    - Water & Steam Coils - Copper MPT connections (with option for Copper FPT or Steel MPT connection)
    - DX Coils - Supply connections are brass distributors with removable type orifice and an optional side port connection for hot gas bypass. Suction headers have Copper SWEAT connections
    - Condenser & Heat Reclaim Coils - Copper SWEAT connections

### "S" & "R"- CONNECTION LOCATIONS

Connection locations may vary according to whether you are replacing an existing coil or designing a new coil. Standard connection locations "S" & "R" are determined from the center line of the connection relative to the top & bottom of the casing.

- Typically, for Water Coils, Standard Steam, Direct Expansion, & Condenser Coils
  - S or R = 1/2(CONN SIZE O.D.) + 0.5  
(e.g. CONN SIZE = 2, S = 1.5)

- Typically, for Steam Distributing Coils
  - S = 1/2(CASING HEIGHT)
  - R = 1/2(CONN SIZE O.D.) + 0.5

### "E" & "F"- CONNECTION LOCATIONS

"E" & "F" dimensions are determined from the center line of the connection relative to the sides of the casing. These dimensions are probably the most "mysterious" of all coil dimensions, for they are dependent on many factors - number of rows, tube pattern, header diameter, type of offset adapters available, etc. The following schematic and respective formulas should help in calculating "E" & "F"

### TYPICAL CONNECTION LENGTHS FOR STANDARD O.D. CONNECTION SIZES

CONN DIA	STD	STD	ABSOLUTE MINIMUM "L" DIM
	MPT "L" DIM	FPT "L" DIM	
3/4	2	2	1 1/4
1	2	2 1/4	1 1/4
1 1/4	3	2 1/2	1 1/2
1 1/2	3 1/4	2 1/2	1 5/8
2	3 1/2	3	1 3/4
2 1/2	3 1/2	3 1/4	2
3	4	3 1/4	2

### CONNECTION SIZES- HEADER DIAMETERS

- As shown in the chart, standard MPT and FPT connection diameters (OD's) range from 3/4" to 3". Contact factory for special connection sizes.
- For water coils, connection Sizes are typically sized based on GPM of water

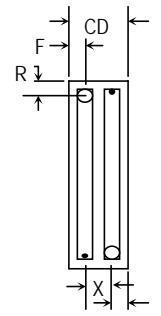
GPM	1-4	4-8	8-16	16-30	30-40	40-75	75-150
CONN	3/4	1	1 1/4	1 1/2	2	2 1/2	3

- For SWEAT connections and header diameters add, 1/8" to the standard connection size.

HEADER O.D. = CONNECTION SIZE + 1/8"  
 SWEAT CONNECTION = CONNECTION SIZE + 1/8"  
 (e.g. Coil with 1" MPT connections, header O.D = 1 1/8")

Exceptions: Non-Freeze Steam Distributing Coils have fixed header diameters regardless of connection size

1 ROW STEAM DIST COIL = 2 5/8" O.D. Header  
 2 ROW STEAM DIST COIL = 3 1/8" O.D. Header



$$X = (\text{No. Rows} - 1) * (\text{Distance between Rows})$$

For 5/8" tube coils  
 Dist. between rows = 1.30  
 For 1/2" & 3/8" tube coils  
 Dist. Between rows = 1.08

For 1 row coils - "E"&"F" = 1/2(CD) +/- (Offset Option)

For 2-12 row coils - "E"&"F" = 1/2(CD - X) +/- (Offset Option)

Note: Offset Option - Offset adapters are required if the header diameter is greater than the dimension "X".

Standard Offsets for Stellar I.T. Coils

5/8" tube - 0.75, 1.30, 2.05, 2.60  
 1/2" tube - 1.08, 2.16

NOTE ALL STD. OFFSET ADAPTERS ARE 3.25" LONG

- Coils can be provide with special offset adapters if required. These special offsets are known as "tookies"- a term . For special offsets or "tookies" contact the factory.

Stellar Industrial Technologies Co., Inc.  
 1918 Yorktown Ct \* Lancaster OH 43130  
 (740) 654-7052 \* FAX (740) 654-7053



## COIL DIMENSION GUIDELINES

### ROWS

- Horizontal rows of tubes in the fin pack  
Typical Row Depth for Stellar I.T. Coils
- Chilled Water and DX Coils - 3 to 12 rows
  - Hot Water Coils - 1 to 3 rows
  - Steam Coils - 1 to 2 rows
  - Condenser Coils - 1 to 8 rows

### FPI - FINS PER INCH

- 1/2" & 3/8" OD tube coils - 10 to 16 fpi
- 5/8" OD tube coils - 4 to 14 fpi
- Standard fins are .006" die formed aluminum with collared tube holes
- Optional fins are .010" aluminum and .006" copper
- Contact factory for special fin materials and fin coatings

### FH - FIN HEIGHT

- Fin heights are dictated by our tube patterns.
- For 5/8" coils, fin heights are available in increments of 1.5"
- For 1/2" & 3/8" coils, fin heights are available in increments of 1.25"
- (e.g. 5/8" coil with 24" fin height ÷ 1.5 = 18 tubes high)

### FL - FIN LENGTH

- Fin Length can be any size. Center supports (also called tube supports) are required for every 50" of fin length. A center support is sheet metal with tube holes used to support the middle of the fin pack.

### SP1, SP2 - SIDEPLATE FLANGES

- Standard flanges are typically 1 1/2" and stackable. Minimum stackable flange is 1/2".
- Inverted, flat sideplate flanges are typically 1" and Casing Height CH is increased on both sides by the 1/16" thickness of the metal.
- (e.g. 9" Fin Height + Inverted Flat Side Plates = 9 1/8" Casing Height)
- Available casing materials are 16 gauge galvanized steel and 16 gauge stainless steel
- Contact factory for other casing materials

FAQ: Why are top and bottom flanges called side plates?  
ANSWER: When our coil builders are expanding the tubes to the fins, the coil face lays flat on the table, so the top and bottom flanges are actually viewed as side plates.

### EP1, EP2 - END PLATES (also called tube sheets)

- Standard flanges are usually 1 1/2" and made of 16 gauge galvanized steel
- 16 gauge stainless steel end plates are also available

### CH - CASING HEIGHT

- For coils with stackable flanges, casing height is calculated as follows:  
CH = SP1 + FH + SP2  
(e.g. SPI = 1.5, FL = 30, SP2 = 1.5)  
CH = 33
- For inverted flat casing, casing height is calculated as  
CH = FH + 1/8

### CL - CASING LENGTH

$$CL = EP1 + FL + EP2$$

### CD = CASING DEPTH

Standard coil casing depths are as follows

ROWS DEEP	"CD" DIM
1	5
2	6 1/2
3	6 1/2
4	7 1/2
5	7 1/2
6	10
8	12
10	15

NOTE: These dimensions were chosen to ensure that headers remain inside the casing, however, modifications can be made as long as

$$CD > \text{Fin Pack}$$

Where CD is Casing Depth

$$\text{Fin pack} = (\text{No. Rows}) * (\text{Centerline Distance between Rows})$$

### MAX

- MAX is the dimension from the edge of the fin pack to the outside of the return bend. A return bend is simply a bent copper tube connecting two adjacent rows
- Minimum MAX Dimension is 1.5".
- Typical MAX dimension used by PEF is 2.25".
- Sometimes the flange, EP1 exceeds the MAX dimension. In such a case, substitute the MAX dimension with EP1.

### "C" DIMENSION

- "C" is the dimension from the edge of the fin pack to the outside of the header. For opposite end connection coils, there would be two "C" dimensions - C1 & C2.
- Attached to the header are copper tubes or "adapter" tubes which connect the coil tubes to the header.
- Standard adapter tube lengths are 3.25" and 2"
- (e.g. Coil has a 1 1/8" header with 3 1/4" adapter tubes)

$$C = 1 \frac{1}{8} + 3 \frac{1}{8} = 4 \frac{3}{8}$$

NOTE: ALL DOUBLE CIRCUIT COILS TO HAVE A MINIMUM ADAPTER TUBE LENGTH OF 3.25".  
2" ADAPTERS CANNOT BE USED FOR DOUBLE CIRCUIT

### OAL - OVERALL LENGTH

- For same end connection coils, overall length is the dimension from the edge of the return bends on one end to the outside of the header on the other end.  
OAL = MAX + FL + C  
(e.g. MAX = 2 1/4, FL = 48, C = 4 3/8)  
OAL = 54 5/8
- For opposite end connection coils, overall length measures from the outside of the header on one end to the outside of the header on the opposite end.  
OAL = C1 + FL + C2  
(e.g. C1 = 3 1/8, FL = 48, C2 = 3 1/8)  
OAL = 54 1/4

- Note that connection length "L" is not included in this dimension.