

**MARLO**<sup>™</sup>  
HEAT TRANSFER SOLUTIONS

# INDUSTRIAL AND COMMERCIAL COIL PRODUCTS



## THE INDUSTRY LEADER IN RELIABLE HEAT TRANSFER PRODUCTS SINCE 1925

### Marlo History

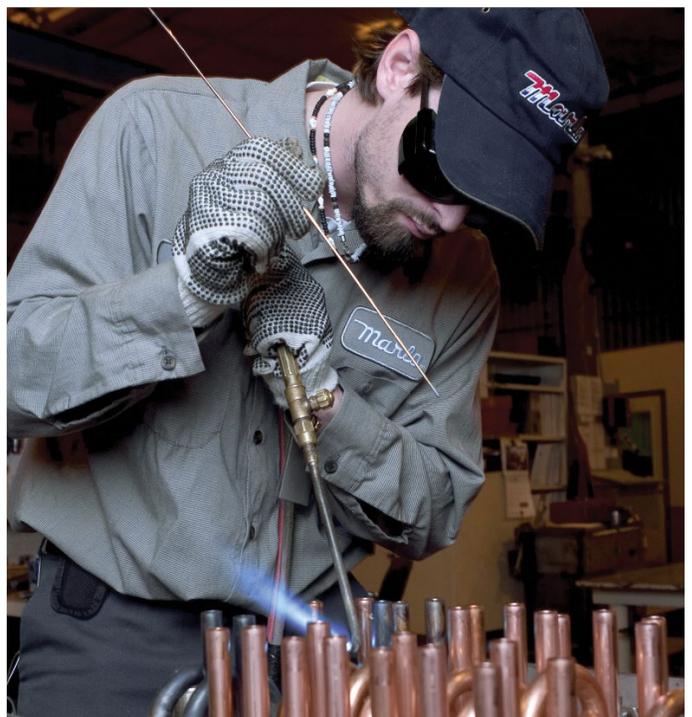
Since 1925, Marlo Coil has manufactured quality heat transfer, refrigeration and air handling equipment for industrial, commercial, utility and marine markets, including the US Navy. Our custom engineered heat transfer solutions are used to cool, heat and dehumidify air streams for both processes and building comfort. Centrally located near St. Louis, Missouri, our 180,000 square foot facility manufactures quality products that provide years of dependable performance, even in the most demanding conditions.

### Custom Manufacturing

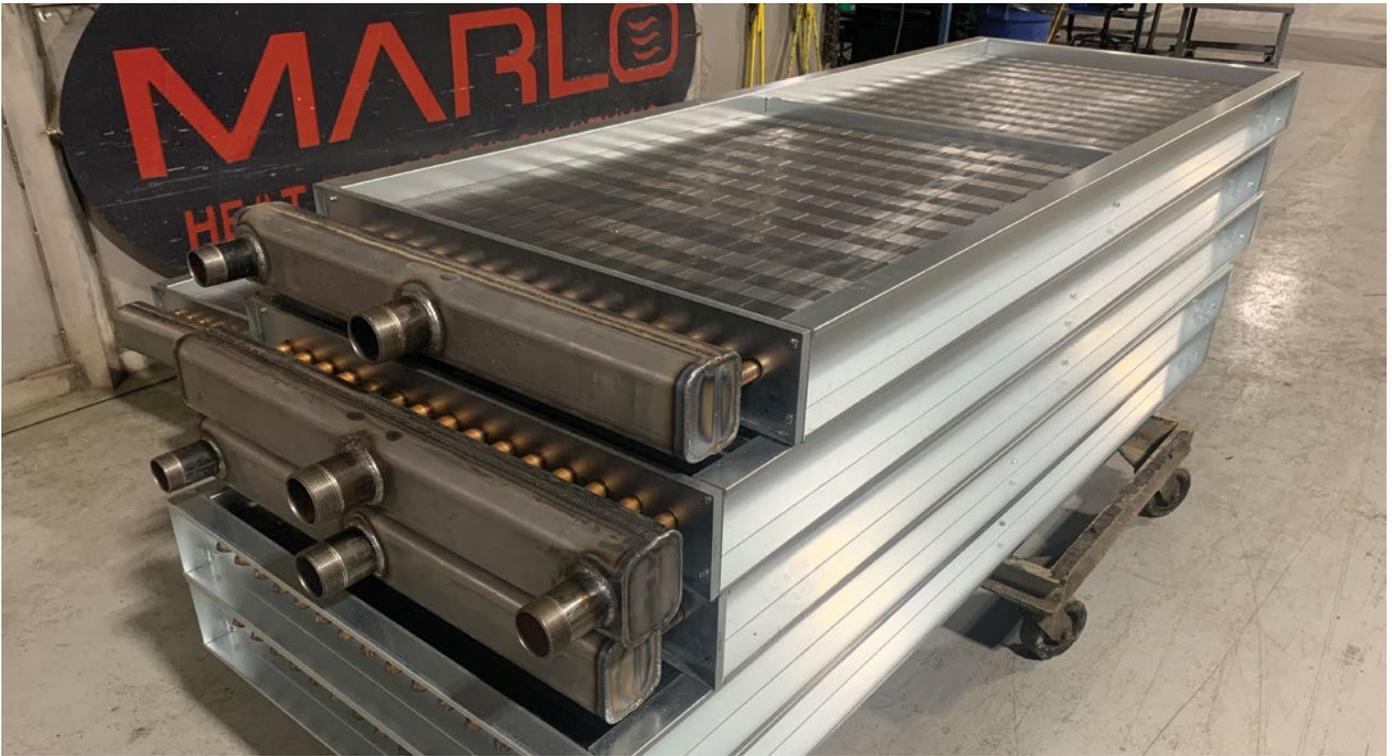
At Marlo, every product is “engineered-to-order” – never “off-the-shelf”. We custom build each product to meet the exact needs of its application. That means the customer can choose the specific features and performance needed, including things like unusual sizes, unique materials, extra durability or other special features. There is virtually no limit to the amount of customization we can build into any of our many products.

### Expert Engineering

Marlo engineers are experts in designing coils for all types of applications, from common comfort heating and cooling to complex thermal processes. Heat recovery, vapor recovery, process heating and moisture removal are common applications for Marlo designed coils. We use the latest design and analysis technology, including Computational Fluid Dynamics, to accurately predict air and water flow patterns through the coil, as well as to calculate pressure drop and heat transfer values.







## FLUID, REFRIGERANT AND STEAM COILS

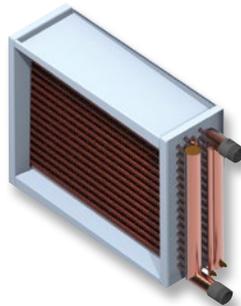
### Fluid Coils

Fluid coils typically feature multiple row coils with various circuit options. Full-size return bends and properly sized headers are utilized to ensure uniform flow and minimized pressure loss. Fluid coils are available for chilled water, hot water, glycol and special fluid applications.



### W Coils

Standard water coils typically consisting of multiple rows and circuits.



### P Coils

Similar to standard water coils, P coils feature a pitched core within the casing and auxiliary drain headers to ensure fast and complete drainage of the coil – eliminating the likelihood of freeze damage.

### Cleanable Coils

Fluid coils feature removable brass end caps on the tube ends that allow access to the interior of the coil for cleaning. These coils are typically used in environments where sediment or foreign materials may accumulate within the coil. Individual tube access allows for simple inspection and isolated cleaning. These coils can be ASME “U” stamped for extreme environments.

### J Coils

Plugs located on the supply header end of the coil.

### X Coils

Plugs located opposite the header end of the coil.

### K Coils

Plugs on both ends of the coil to allow straight-through cleaning.



### Coils with Removable Box Headers

Fluid coils featuring removable box headers allow access to the interior of the coil for cleaning. The removable box is ideal for high-sediment fluid environments, such as river or lake water. Removing the headers exposes all of the tubes for easy inspection or cleaning. For higher pressure applications see our J, X and K coils.

#### Q Coils

A removable box header is located on the supply header end of the coil.

#### Y Coils

A removable box header is located on the fluid-return end of the coil.

#### R Coils

Removable box headers are located on both ends of the coil to allow straight-through cleaning.



### Standard Steam Coils

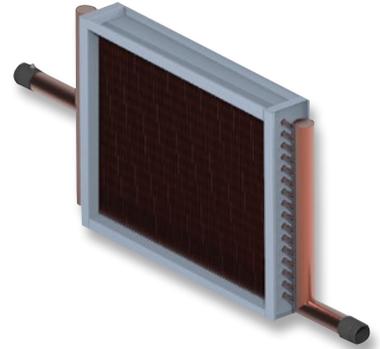
Standard steam coils feature a continuous straight-through steam path with opposite end supply and condensate headers. Cores are pitched within the casing toward the condensate header to promote condensate removal. For low or high-pressure steam applications, these coils are available in several combinations of materials.

#### S Coils

Steam coil utilizing 0.625" diameter tubes and a straight through steam path.

#### V Coils

Steam coil utilizing 1.0" diameter tubes and a straight through steam path.



### Refrigerant Coils

Our refrigerant or air conditioning coils include evaporator and condenser coils. Direct expansion evaporator coils feature distributors, capillary tubes, suction headers, and optional thermal expansion valves. Condenser coils feature various circuiting options, including sub-cooling circuits. Care is taken to ensure the interior of our refrigeration coils remains contaminant free during production and testing, including a nitrogen charge prior to shipment.

### Distributing Steam Coils

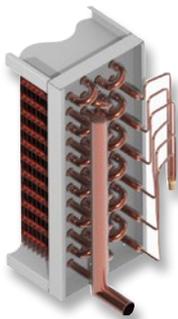
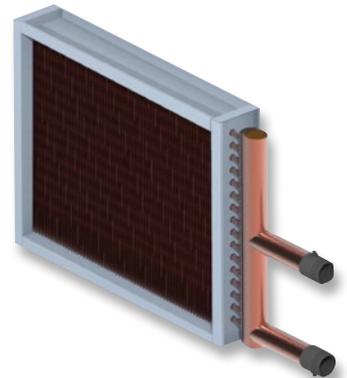
These coils have smaller-diameter tubes within larger tubes, which distribute the steam uniformly across the coil, eliminating cold spots. As a result, these coils are often referred to as "freeze proof" coils. Cores are pitched within the casing toward the header to promote condensate removal. They are available in several combinations of materials, for low-or high-pressure steam applications.

#### D Coils

Features 0.625" diameter outer tubes with 0.375" inner steam distributing tube.

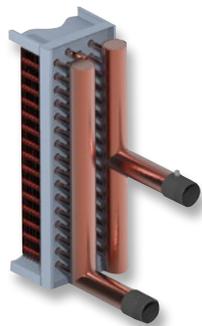
#### H Coils

Features 1.0" diameter tubes with 0.625" inner steam distributing tube. Marlo "H" coils have tighter spacing than competitive 1" tube coils, leading to more performance in a smaller package. Multiple rows in one casing result in less piping.



#### E Coils

Direct expansion evaporator coils for use with most refrigerants.



#### C Coils

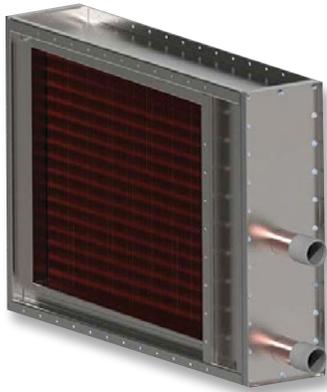
Condenser coils for use with most refrigerants.

## SPECIALTY PRODUCTS

### Air Tight Housings

Some industrial processes require a coil to be installed in an air tight housing to allow heat transfer while preventing environmental contamination. Our housings are constructed from heavy gauge materials that are selected for suitability in their specific application. Features of our airtight coils include:

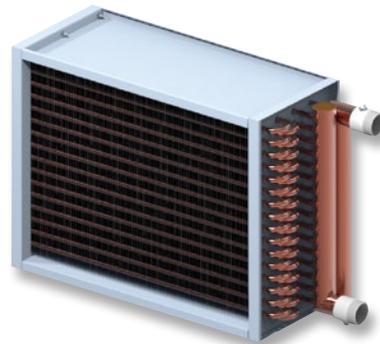
- Designed for pressures from 10" to 10 PSI (higher available)
- Coils can be removable or permanently mounted
- Gaskets for doorplates are selected for temperature and chemical resistance
- Available with integral drain pans for condensing applications
- Transitions and flanges are available to mate housings to square or round ducts

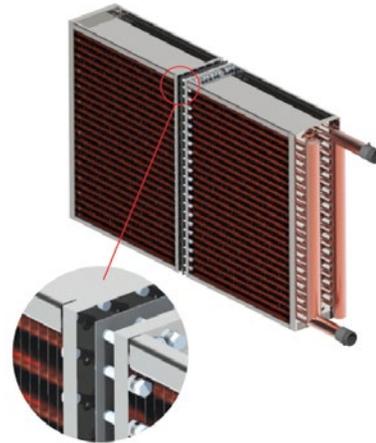
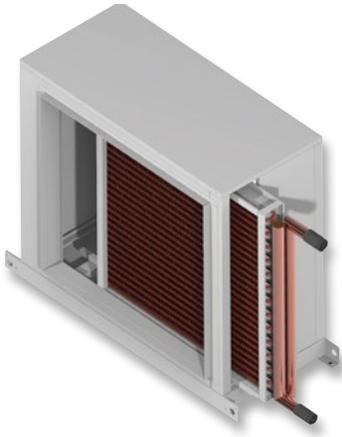


### Humidity Control Coils (HCC)

Our Humidity Control Coils are cooling coils that recirculate the warm fluid leaving the coil to heat and desaturate the air exiting the coil. This eliminates excessive moisture in the airstream and prevents damage to filters, making the HCC an ideal choice for hospitals and other critical environments that use expensive HEPA and ULPA filters. Other advantages include:

- Much more cost effective than the traditional solution of using both a cooling coil and separate heating coil
- Use of a common frame and single inlet and outlet greatly reduce complexities and installation costs
- Re-heat circuits on the air exit side of the coil reduce humidity and minimize carryover
- Intermediate drain pans, compliant with indoor air quality standards, further eliminate condensate management problems





### Removable Coil Modules (RCM)

Our Removable Coil Module is a direct replacement coil section for existing air-handling units. The RCM can simplify coil replacement while adding new coil supports and a stainless steel drain pan to existing units. RCMs are available in custom sizes ranging from approximately 2-60 square feet of coil face area. Features include:

- Galvanized or stainless steel cabinets, optional painted exterior
- Custom heating or cooling coils, including steam and water coil combinations
- Integrated lifting lugs
- Full-length stainless steel drain pan with IAQ slope
- Coils removable from either side of cabinet
- Single or double wall construction
- Choice of 1" or 2" insulation
- Optional integrated filter section

### Split Core Coils

Our split core coil is an optional feature that allows nearly any coil we manufacture to be divided into smaller sections to ease installation in limited space applications. The coil is split in the core area with divider plates and re-assembled on-site for a permanent installation. Features of the split core coil design:

- Allows direct replacement of long-finned length coils with minimal performance loss
- A coil can be divided into several sections if required
- Existing AHU or ducts can be used with little or no modifications
- Existing piping can be used without modification in most cases
- Coil core is leak tested at the factory prior to shipment
- A unique sealant is used to seal the assembled coil without plugging tubes

## QUALITY CONSTRUCTION MEANS LONGER COIL LIFE

At Marlo, we design and build our coils to deliver years of reliable performance, while also providing maximum heat transfer. We select only top-quality materials—typically in heavier gauges than our competitors—and use design and manufacturing techniques that are proven to increase coil life. Some of the ways we build quality and performance into our products are highlighted below.

### Choice of Fin Options

We offer three fin styles, most available in either copper or aluminum, to meet the needs of each application:

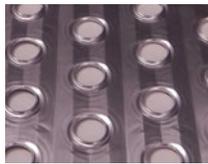
**Flat Fin** - a flat fin surface minimizes air turbulence, resulting in the lowest air pressure drop and a lower heat transfer capability. Flat fins are also less likely to collect debris and are easier to clean.



**Turbex Fin** - our sine wave fin offers the most dramatic wave pattern, which creates greater air turbulence, providing the highest heat transfer efficiency, while also increasing air pressure drop.



**Marlo "M" Fin** - designed with a less pronounced wave than a Turbex fin, this V-waffle fin offers a balance between high heat transfer efficiency and low air pressure drop.



### Staggered Tube Design

Our multiple row coils feature staggered tubes to maximize heat transfer efficiency.



### Engineered Header System

Our headers are designed to reduce the potential for leaks and provide connection locations that allow venting and draining at the highest and lowest points on the coil. We never design coils with trapped circuits, which substantially increase the risk of freeze damage. If you order a coil that includes trapped circuits, our experts will notify you and offer solutions. We also use extruded tube holes to increase surface contact for brazed joints, providing a strong bond that minimizes the potential for leaks.



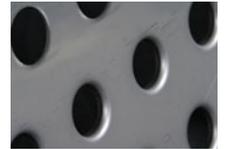
### Heavy Gauge Casings

Heavy gauge galvanized or stainless steel casings are used to provide support while lifting and handling the coil. Baffling and supports can be attached using self-tapping screws or optional duct mounting holes can be added to facilitate using bolts and nuts for installation.



### Tube Sheets with Extruded Holes

Our standard tube sheets feature extruded tube holes to allow thermal expansion and contraction of the tubes while preventing damage from the metal edge. Optional copper ferrules can be added for additional protection.



### Hairpin Tubes and Return Bends

Continuous hairpin tubes offer maximum leak protection by eliminating joints within the circuit. When return bends must be used on our copper tube coils, they are sized one wall thickness heavier than the tube to provide superior erosion resistance, resulting in the longest possible coil life.



### Integrated Pitched Casing

Our steam and drainable fluid coils feature a heat transfer core that is pitched within the casing to promote drainage, even when the coil is installed level.



### Spun Tube Ends

Our distributing steam coils feature tube ends which are spun down to close the tube completely without adding an end disc or cap. The tip of the spun end is then brazed to eliminate the possibility of leakage.



### Coil Model Nomenclature

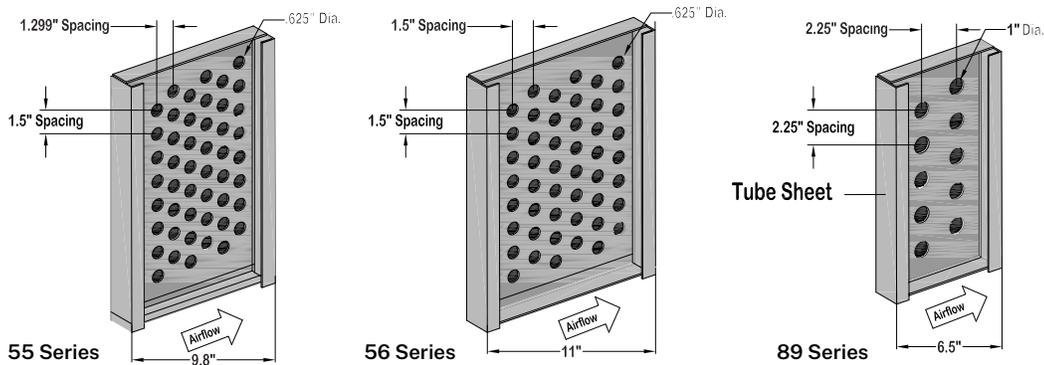
Fluid Coils	8W24-96-5608T-24.3-H-1.0-R-B	8	W	24	-	96	-	56	08	T	-	24.3	-	H	-	1	-	R	-	B
	Typical Model Numbers	(a)	(b)	(c)	-	(d)	-	(e)	(f)	(g)	-	(h)	-	(i)	-	(j)	-	(k)	-	(l)
Steam Coils	2D16-60-5610F-10.2-H-B	2	D	16	-	60	-	56	10	F	-	10.2	-	H						B

#### Description

- (a) Rows in Direction of Airflow
- (b) Coil Type
- (c) Number of Tubes High in Face of Coil
- (d) Finned Length
- (e) Tube O.D.: 55 = Tube O.D. and Spacing (55, 56 or 89)
- (f) Fin Spacing In Fins Per Inch
- (g) Fin Style: T (Turbex), F (Flat) or M (V-waffle)
- (h) Face Area of Coil (sq ft)
- (i) Airflow Direction: H (horiz) or V (vert)
- (j) Serpentine (Circuit)
- (k) Coil Hand: R (Right) or L (Left)
- (l) Joint construction: B (Brazed) or W (Welded)

#### Coil Types

- W Water
- E Evaporator
- P Pitched & drainable
- J, X, K Cleanable plug
- Q, Y, R Removable box header
- A Ammonia coil
- C Condenser coil
- D 5/8" tube distributing steam
- H 0" tube distributing steam
- S 5/8" tube blast steam
- V 1.0" tube blast steam



### Other Materials

Material	5/8" or 1" O.D. Tubes Tube Wall (in.)	Headers	Casing
Copper	.025", .028", .035", .049", .065"	Types M, K & L tubing	0.125"
Aluminum	.049", .065", .083"	Sch. 40, 80	.063" to .125"
90/10 or 70/30 Copper/Nickel	.035", .049", .065"	Sch. 40, Class 200	-
Admiralty Brass	.035", .049", .065"	Sch. 40, 80	-
Carbon Steel	.035", .049", .065"	Sch. 40, 80 or 10 GA.	16 to 10 GA.*
304 & 316 Stainless Steel	.035", .049", .065"	Sch. 40, 80 or 10 GA.	16 to 10 GA.
AL6XN, Red Brass, Carpenter 20, Incoloy, Hastelloy, Monel, SMO254, Titanium or many other special materials	Contact Factory		

\* Steel casing material is galvanized unless otherwise specified

Coil Hand is determined by position of outlet connection when facing entering air side.



## THE MARLO STRATOMIZER®

Our Stratomizer Dampered Face and Bypass Coil – also known as an Integral Face and Bypass Coil (IFB) – provides the most reliable method of preheating and tempering fresh outside air, while maintaining full steam pressure or constant hot water flow to the coil at all times.

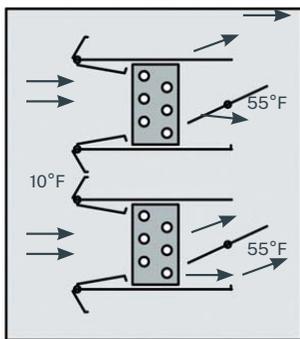
Ideal for climates where temperatures can fall below or near freezing, the Stratomizer offers protection against freezing, constant airflow and more accurate temperature control. They can be added to air handling units to pre-heat the air entering the unit, or can be used to heat make-up air entering a building.

### How it Works

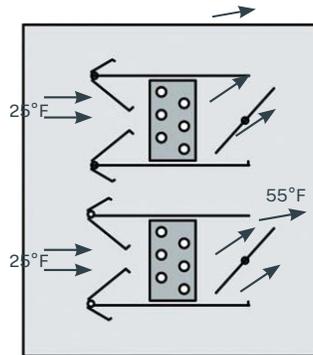
The Stratomizer consists of multiple heating coils, each featuring specially designed damper blades which open and close in virtually limitless positions to precisely mix the cold bypass air with the air heated by the coils (see examples below). The positioning of the damper blades is controlled by temperature sensors in the downstream air, allowing the preset discharge air temperature to be maintained, despite variations in the inlet air temperature.



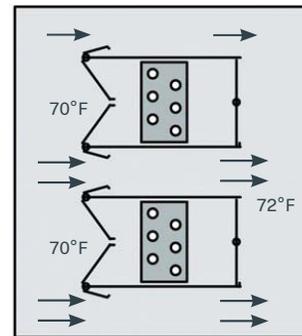
*Every Stratomizer is custom built to order, so we can match the form and function of IFB coils from any other manufacturer.*



When entering air temperature conditions require maximum heating, the dampers fully open and the upstream dampers direct all the entering air through the heating coil face.



As the entering air temperature increases, the dampers are automatically repositioned, proportioning the correct amount of entering air through both the heating coil faces and bypasses.



When no heating is required, the dampers are closed and the upstream dampers direct all the entering air through the bypasses. The rear dampers enclose the heating cores minimizing temperature override.

### Features

- Vertical or horizontal tube orientation
- 14-gauge galvanized or stainless steel casing
- 16-gauge galvanized or stainless steel integral bypass baffles
- Optional epoxy-painted casing or phenolic coatings
- Downstream actuator mounting available for reduced width/height
- Optional connection locations to simplify piping
- Extruded anodized aluminum damper blades
- Integral EPDM blade edge seals – silicone optional
- “D” shaped damper shafts for positive torque without slipping
- Stainless steel primary drive shafts
- Oil-impregnated bronze bearings
- Non-ferrous damper linkage – out of the air stream
- Distributing steam design on horizontal models
- Floating header design
- Three-year warranty

## Blades

Extruded anodized aluminum damper blades with integral edge seals and "D"-shaped damper shafts to prevent slipping.

## Casing

14-gauge galvanized or stainless steel casing with 16-gauge integral bypass baffles.

## Stratomizer Model Number Nomenclature

Typical Model : K72-56-2-10-T-R-0

Nomenclature: K 72-56-2-10-T-R-0  
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓  
 (a) (b) (c) (d) (e) (f) (g) (h)

## Description

- (a) Model designation  
(A-F = Horizontal, G-N = Vertical orientation)
- (b) Finned length
- (c) Tube o.d. : 56 = 5/8", 89=1.0"
- (d) Number of rows in direction of airflow
- (e) Fin Spacing in Fins Per Inch
- (f) Fin Style-T or F (Turbex or Flat)
- (g) Coil Hand -R or L -Right or Left
- (h) Serpentine (Circuit): 0 = Steam, .333, .375, .750, 1.00, 1.5 =Water

## Linkage

Stainless steel and non-ferrous linkage located out of the air stream.

## Heating Core

Plate fins provide excellent heat transfer while offering simple cleaning.

## Controls

Pneumatic or electrical proportional actuators, including direct drive options.

## Floating Header

Vertical Stratomizers feature a floating header assembly designed to allow for thermal movement.

## Horizontal Stratomizer

NOMINAL FIN LENGTH			29	35	41	47	53	59	72	84	96	120
UNIT DESIGNATION	FACE SECTIONS	HEIGHT (INCHES)	WIDTH (INCHES)									
			42	48	54	60	66	72	85 3/8	97 3/8	109 3/8	133 3/8
			OUTLET AREA (FT <sup>2</sup> )									
			NOM. WEIGHT (LBS)									
A	3	27.00	4.57 260	5.53 275	6.49 315	7.45 355	8.41 395	9.36 435	11.50 475	13.42 510	15.33 550	19.17 630
B	4	35.38	-- 330	7.54 375	8.85 420	10.16 470	11.47 515	12.77 560	15.69 605	18.30 650	20.92 700	26.15 740
C	5	43.75	-- 385	9.56 440	11.21 490	12.87 545	14.53 595	16.18 645	19.88 700	23.19 750	26.50 800	33.13 855
D	6	52.13	-- 445	11.57 500	13.58 560	15.58 620	17.59 675	19.59 735	24.06 790	28.07 850	32.08 900	40.10 965
E	7	60.50	-- 500	13.59 565	15.94 630	18.29 690	20.65 755	23.00 820	28.25 885	32.96 950	37.67 1000	47.08 1080
F	8	68.88	-- 555	15.60 625	18.30 695	21.01 765	23.71 830	26.41 900	32.44 970	37.84 1040	43.25 1100	54.06 1190

## Vertical Stratomizer

NOMINAL FIN LENGTH			35	41	47	53	59	72	84	96	108	
UNIT DESIGNATION	FACE SECTIONS	WIDTH (INCHES)	HEIGHT (INCHES)									
			49.63	55.63	61.63	67.63	73.63	87.00	99.00	111.00	123.00	
			OUTLET AREA (FT <sup>2</sup> )									
			NOM. WEIGHT (LBS)									
G	4	35.88	7.66 305	8.99 340	10.32 375	11.65 415	12.98 450	15.94 485	18.89 520	-- --	-- --	
H	6	52.63	11.69 425	13.72 475	15.74 525	17.77 575	19.80 625	24.31 675	28.36 730	32.42 785	-- --	
J	8	69.38	15.72 540	18.44 605	21.17 670	23.89 740	26.62 805	32.69 870	38.14 935	43.58 1000	49.03 1065	
K	10	86.13	19.75 660	23.17 740	26.59 820	30.01 900	33.43 985	41.06 1065	47.91 1145	54.75 1225	61.59 1305	
L	12	102.88	23.77 775	27.89 870	32.01 970	36.13 1065	40.25 1160	49.44 1255	57.68 1355	65.92 1455	74.16 1555	
M	14	119.63	27.80 895	32.62 1005	37.44 1115	42.26 1230	47.07 1340	57.81 1450	67.45 1560	77.08 1670	86.72 1780	
N	16	136.38	31.83 1010	37.35 1135	42.86 1265	48.38 1390	53.89 1515	66.19 1645	77.22 1770	88.25 1895	99.28 2020	

← Subtract 6.625" for water coils

Marlo Heat Transfer Solutions

6060 Hwy PP

High Ridge MO 63049

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