

AIREDALE

Commercial Fin Tube Radiation

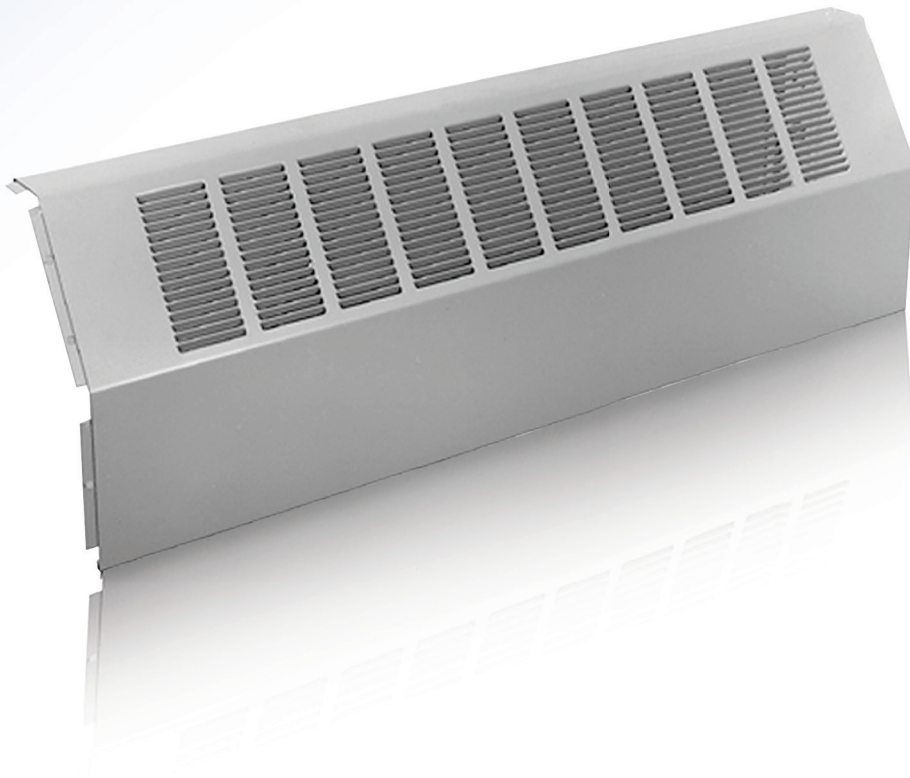


TABLE OF CONTENTS / NOMENCLATURE

Table of Contents

	Page
Model Location	3
Design Features - System Components/Accessories.....	4
Installation	6
Sample Sizing Calculations.....	8
Correction Factors.....	10
Model Information (see Page 3)	12
Specifications	47



The Modine Breeze® AccuSpec is the fastest way to generate performance data based on actual job conditions. The Breeze® AccuSpec program is a web-based sizing and selection program. The program provides a series of step-by-step questions that allow for the easy configuration of Modine products. After a model has been configured, the program can generate Submittal Schedules, Submittal Data (including performance and dimensional drawings), and Specifications.

Enclosure Nomenclature

1,2,3	4,5,6	7,8	9	10,11,12
ET	EH	MG	DMP	EL

1,2,3 - Enclosure Type (ET)

S - Slope Top
 SP - TrimFin Slope Top
 R - Front and Top Outlet
 F - Front Outlet
 T - Top Outlet
 TA - Top Outlet, Architectural Grille
 SF - Slope Top Floor Mount
 RF - Front and Top Outlet Floor Mount
 P - Pedestal Mount
 PA - Pedestal with Architectural Grille
 PS - Slope Top Security
 EM - Expanded Metal Element Cover
 FT - Flat Top Element Cover
 BIP - Bottom Inlet Panel

4,5,6 - Enclosure Height (EH)

001 - 1 Row Wide Pedestal
 002 - 2 Row Wide Pedestal
 003 - TrimFin Bottom Inlet Panel
 004 - 4" High Enclosure
 005 - Std Bottom Inlet Panel
 008 - 8" High Enclosure
 010 - 10" High Enclosure
 012 - 12" High Enclosure
 014 - 14" High Enclosure
 018 - 18" High Enclosure
 024 - 24" High Enclosure

7,8 - Material Gauge (MG)

14 - 14 Gauge
 16 - 16 Gauge
 18 - 18 Gauge
 20 - 20 Gauge

9 - Damper (DMP)

N - No Damper
 K - Knob Damper
 S - Security Damper

10,11,12 - Enclosure Length (EL)

020 - 2' 0" Length
 025 - 2' 6" Length
 030 - 3' 0" Length
 035 - 3' 6" Length
 040 - 4' 0" Length
 045 - 4' 6" Length
 050 - 5' 0" Length
 055 - 5' 6" Length
 060 - 6' 0" Length
 065 - 6' 6" Length
 070 - 7' 0" Length
 075 - 7' 6" Length
 080 - 8' 0" Length

Element Nomenclature

1,2,3	4,5,6	7,8	9	10,11,12
TM	TD	FSP	FSZ	EL

1,2,3 - Tube Material (TM)

CP - Copper

4,5,6 - Tube Diameter (TD)

075 - 0.75"
 100 - 1.00"
 125 - 1.25"

7,8 - Fin Spacing (FSP)

34 - 34 fins/ft.
 42 - 42 fins/ft.
 50 - 50 fins/ft.

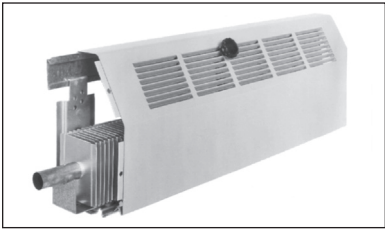
9 - Fin Size (FSZ)

A - 2.75" x 4.25" Fin
 B - 2.75" x 3.25" Fin
 C - 4.25" x 4.25" Fin

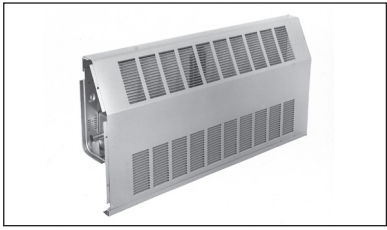
10,11,12 - Element Length (EL)

020 - 2' 0" Length
 025 - 2' 6" Length
 030 - 3' 0" Length
 035 - 3' 6" Length
 040 - 4' 0" Length
 045 - 4' 6" Length
 050 - 5' 0" Length
 055 - 5' 6" Length
 060 - 6' 0" Length
 065 - 6' 6" Length
 070 - 7' 0" Length
 075 - 7' 6" Length
 080 - 8' 0" Length
 085 - 8' 6" Length
 090 - 9' 0" Length
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 100 - 10' 0" Length
 105 - 10' 6" Length
 110 - 11' 0" Length
 115 - 11' 6" Length
 120 - 12' 0" Length

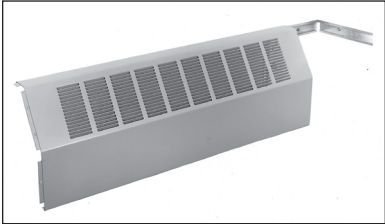
COMMERCIAL FIN TUBE RADIATION



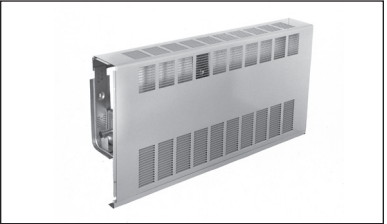
**Model SP
Slope Top - Trimfin™**
Page 12



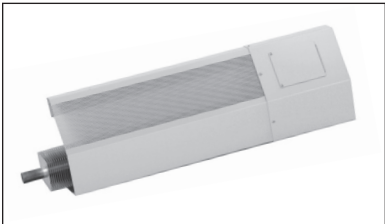
**Model SF Slope Top,
Floor Mounted**
Page 31



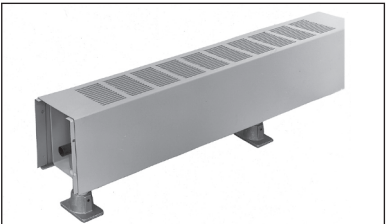
Model S Slope Top
Page 14



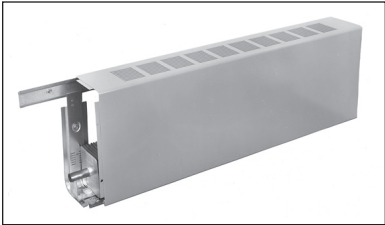
**Model RF Front and
Top Outlet,
Floor Mounted**
Page 33



**Model PS Security
Slope Top**
Page 17



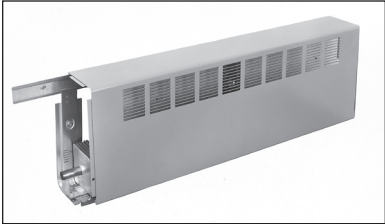
**Model P
Pedestal Style**
Page 35



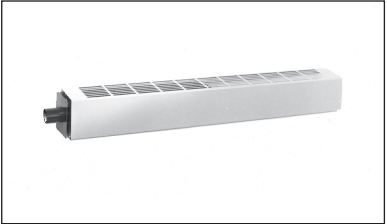
Model T Top Outlet
Page 19



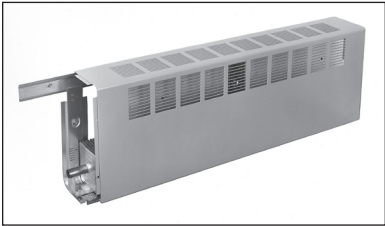
**Model PA Architectural
Pedestal Style**
Page 37



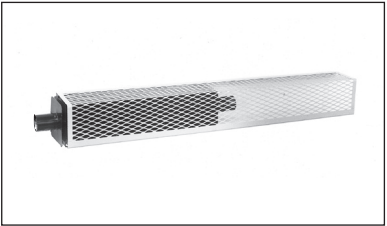
Model F Front Outlet
Page 22



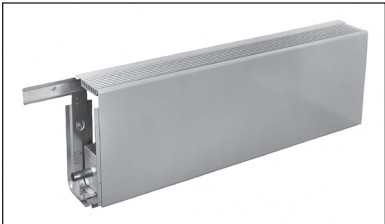
**Model FT Flat Top
Element Cover**
Page 40



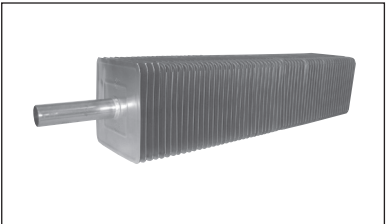
**Model R Front and
Top Outlet**
Page 25



**Model EM Expanded
Metal Element Cover**
Page 42



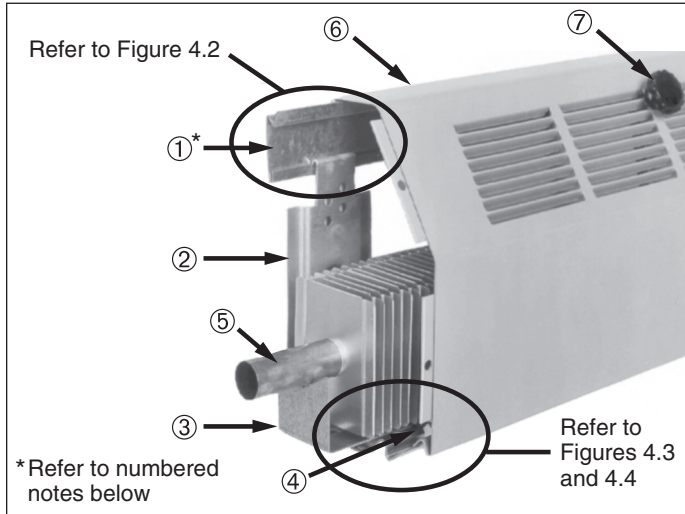
**Model TA
Architectural
Top Outlet**
Page 28



**Model CP Bare
Heating Element**
Page 44

DESIGN FEATURES - SYSTEM COMPONENTS/ACCESSORIES

Figure 4.1 - Typical System Components



1. Hanger strip provides an easy and sturdy method to properly align all components. Enclosure rests in the top V-bend of the hanger strip and positions the enclosure 1/16" from the wall and 3/16" above the top of the hanger strip so it is not visible, creating a clean, one piece appearance (see Figure 4.2). Standard hanger strip is 20 gauge aluminized steel in 4 and 8 foot lengths. Also available with full back panel.
2. Enclosure/element support brackets with heating element cradle are suspended from the bottom V-bend of the hanger strip (see Figure 4.2). Infinite side to side location of brackets allows installation at strongest support points, such as wall studs. The hanger strip bears most of the weight, so only one wall fastener is required for each bracket. Holes are provided near the top of the bracket for installation of return pipe hanger (not available if using a damper in Note 7).
3. All element cradles rest on a full bearing nylon washer. There is no metal to metal contact and no noise from element expansion. Cradle and washer are fastened to bracket with a nylon rivet (see Figure 4.3).
4. The double V-bend of the enclosure rests in the bottom V-bend of the enclosure support bracket (see Figure 4.4). A quarter turn latch (shown in locked position) allows insertion of the enclosure and securely holds it to the bracket. Latch is rotated by using a socket wrench on the Hex head bolt underneath.
5. Copper tube/aluminum fin heating element is available in 3 tube diameters, 2 fin sizes, and 3 fin spacings.
6. Enclosure sections are joined together utilizing a slip joint connection. Viewed from the interior of the enclosure, the slip joint is comprised of left and right hand spot welded clips (see Figure 4.5). Slip joint connections produce a barely noticeable joint on the exterior of the enclosure. Certain accessory parts, such as end caps, are also assembled with slip joint connections.
7. Optional dampers are available with either exposed knob type damper operator or tamper-proof operator to prevent unauthorized damper operation or adjustment (see Figure 5.1). Damper blades are painted to match the enclosure. The damper blades are adjustable to any position between open and closed using a screw type operator. The damper blade assembly is factory installed and permanently attached to the enclosure. The damper operator mechanism is field installed.

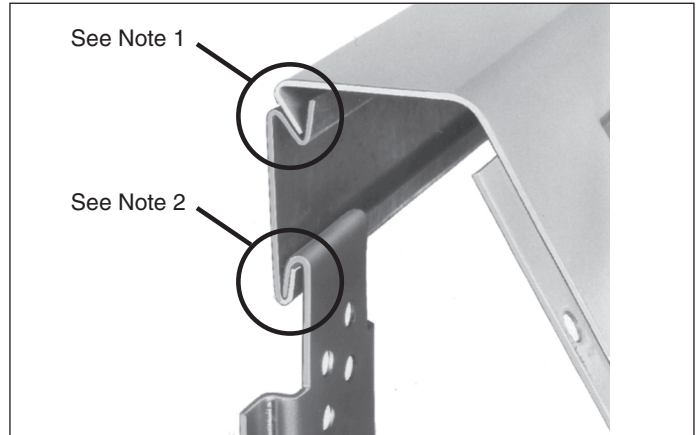


Figure 4.3 - Element/Enclosure Support Assemblies

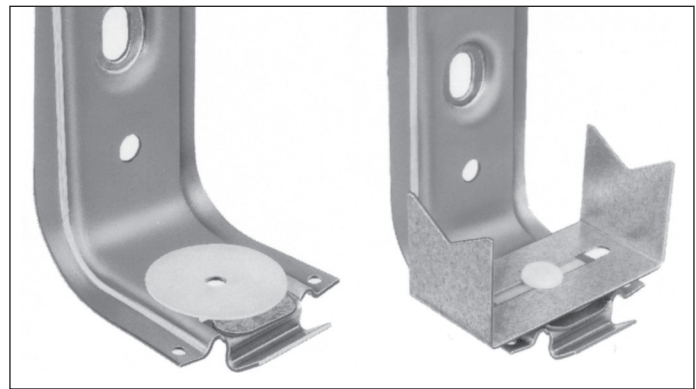


Figure 4.4 - Bottom Enclosure Support

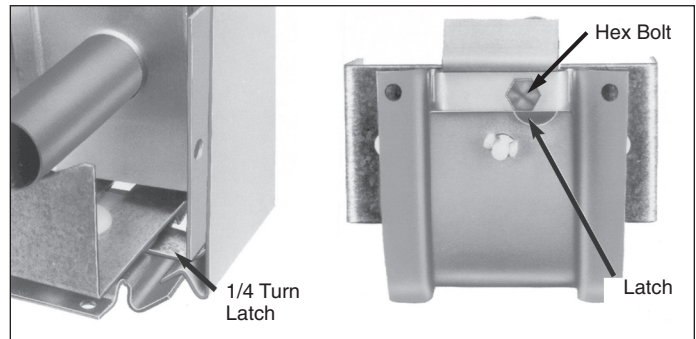
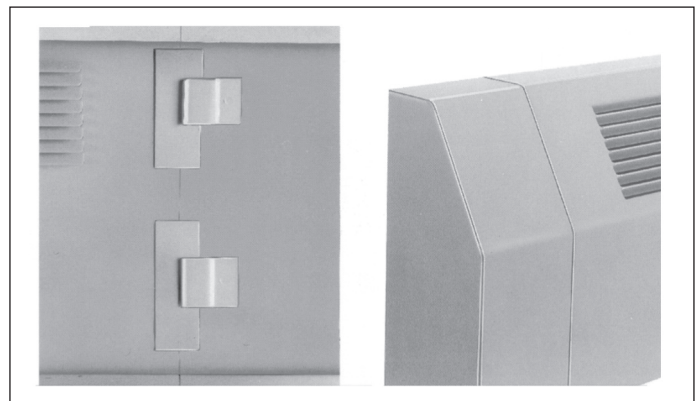
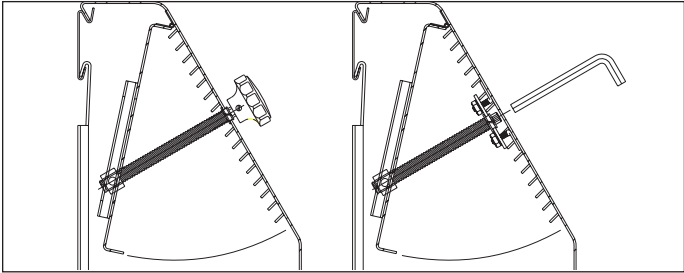


Figure 4.5 - Enclosure Slip Fit Connections



DESIGN FEATURES - SYSTEM COMPONENTS/ACCESSORIES

Figure 5.1 - Damper Operators



8. The bottom inlet panel is available to provide security cover to the open inlet at the bottom of the enclosure. It is fastened to the enclosure support brackets with a plastic expansion dart. See Figure 5.2

Figure 5.2 - Bottom Inlet Panel

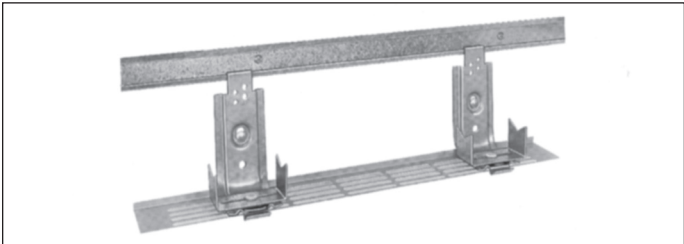
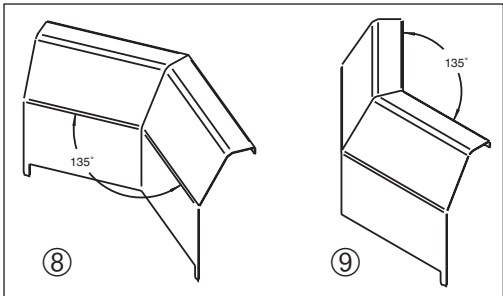
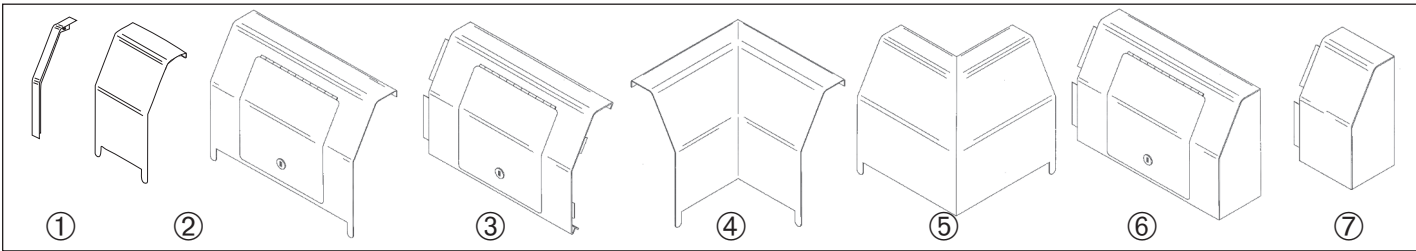
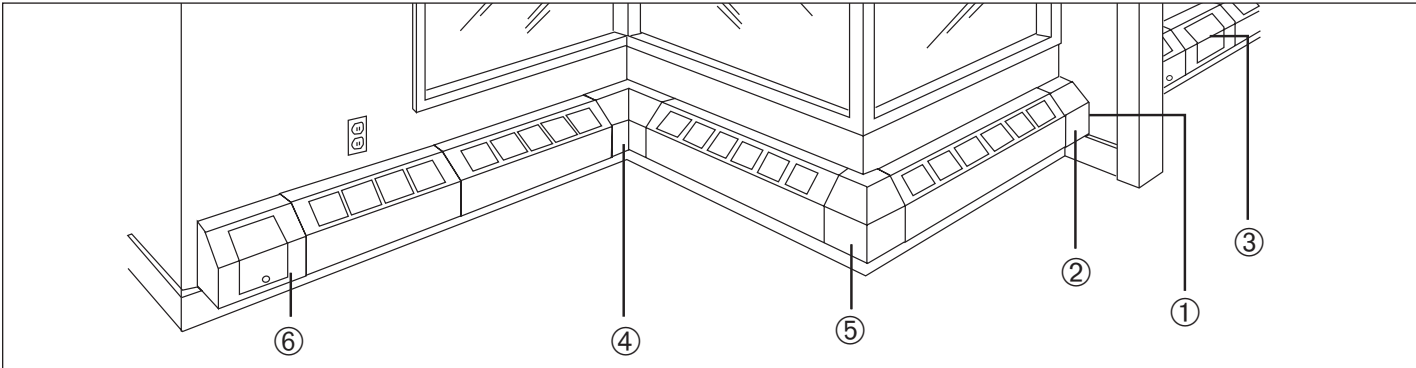
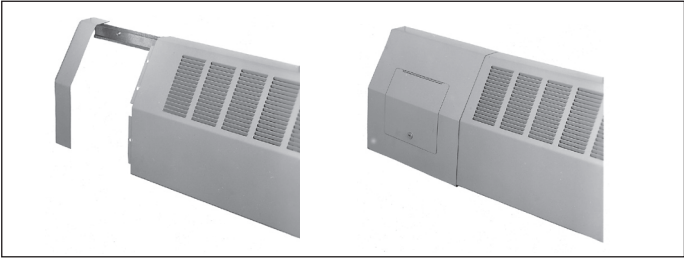


Figure 5.4 - Typical Enclosure Layout



9. A wall support is used to support overlapping enclosure extensions at a wall. A 5" wide enclosure extension completes the gap between the enclosure and the wall. Fold over tabs at the bottom hold the extension firmly in place. Some accessory items, 12" wide extensions, 12" wide end enclosures are available with access doors. See Figure 5.3.

Figure 5.3 - Enclosure Accessories



Ref. No.	Accessory Description ① ②	Fit Type ③
1	Wall Support	(R or L)
2	5" or 12" Wide Enclosure Extension	(O)
2	12" Wide Enclosure Extension with Access Door	(O)
3	12" or 18" Wide Valve Compartment	(S)
4	90° Inside Corner	(O)
5	90° Outside Corner	(O)
6	12" Wide End Enclosure	(S) (R or L)
6	12" Wide End Enclosure with Access Door	(S) (R or L)
7	End Cap	(S) (R or L)
8	135° Inside Corner	(O)
9	135° Outside Corner	(O)

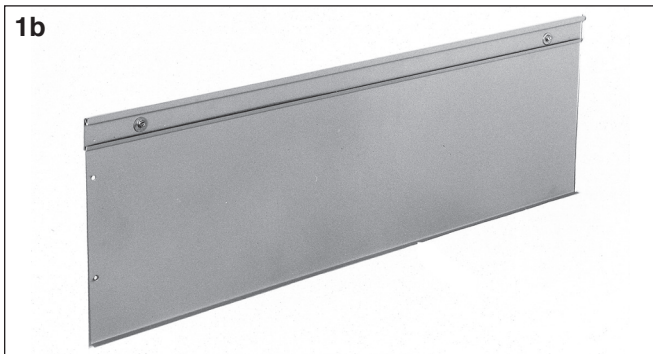
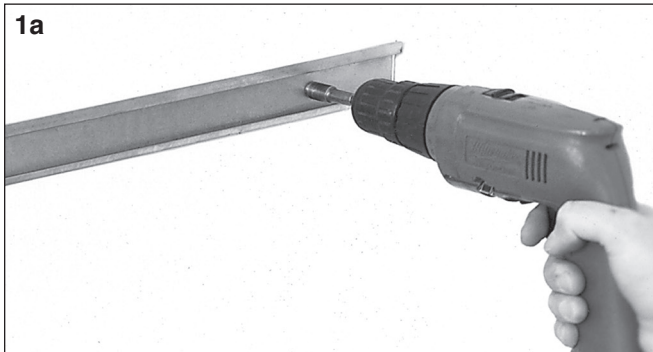
① Accessories constructed of 20 gauge CRS
② See Page 39 for Pedestal support and accessories
③ (O)=Overlapping, (S)=Slip, (R or L)=Right or Left Hand Configurations

INSTALLATION

1. Create a level line at the required mounting height (recommended 4" clearance below element support bracket). Fasten the hanger strip or hanger strip with full back panel at the desired height.

For styles SF or RF, a second line may be set on the floor to locate the floor angle location.

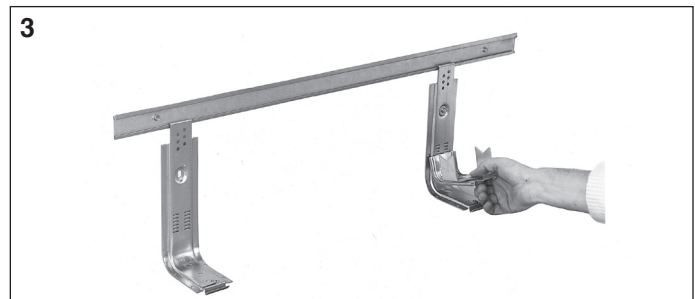
For style P, attach pedestal base to floor. Insert pedestal assembly and adjust height.



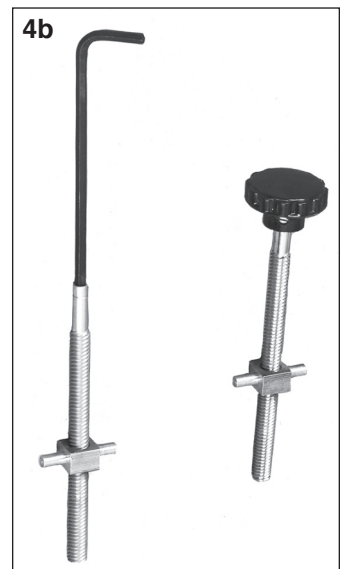
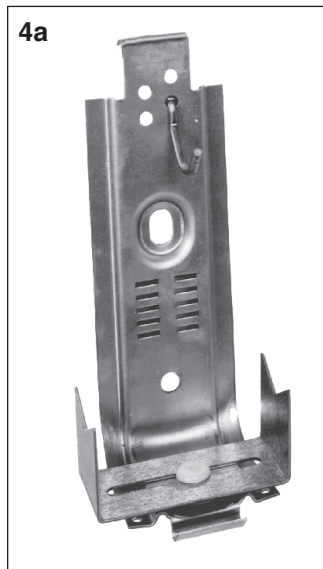
2. Place the Enclosure Wall Support (EWS) on the hanger strip. Position the EWS to assure location directly over wall supports. Fasten each EWS with one fastener to a wall support. EWS placement is recommended every 3 feet. All EWS are equipped with a concealed enclosure lock. If the EWS has been ordered with integral element cradles, skip step 3.



3. When element pitch or other adjustment is required, a separate Element Support Assembly (ESA) is used. The ESA hooks into slots on the EWS. For 12" high style S enclosure, the ESA must be located in the lowest slot to avoid element contact with the enclosure.

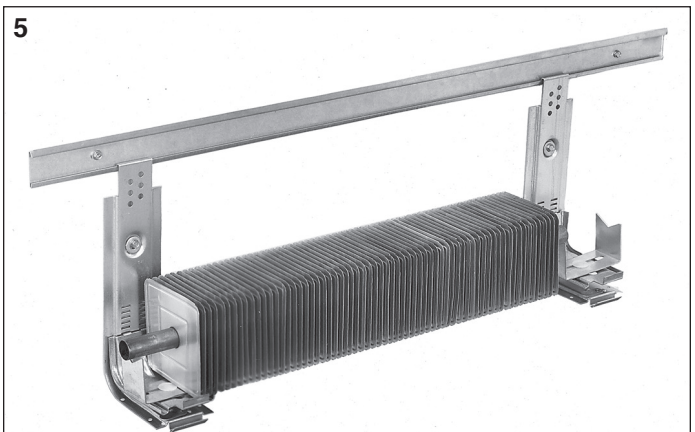


4. Return Pipe hangers (RPH) are attached into holes on the upper portion of the EWS to accommodate return piping. RPH is not to be used in combination with a damper for styles S or SF enclosures.



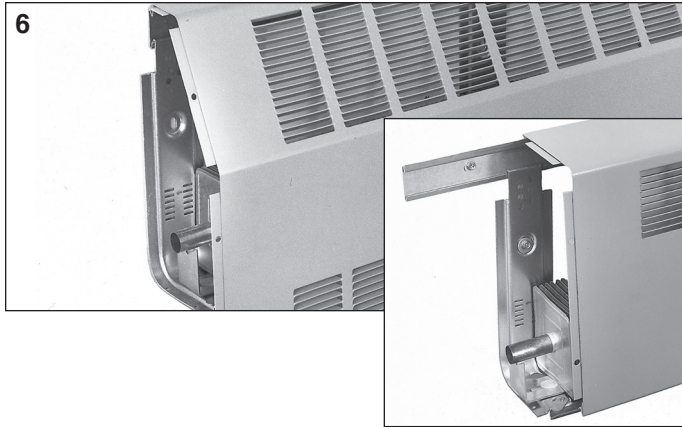
If dampers are included, the operator must be pre-assembled prior to enclosure installation.

5. In the fin-tube element placement, position the cradle on the EWS to allow for expansion of the element.

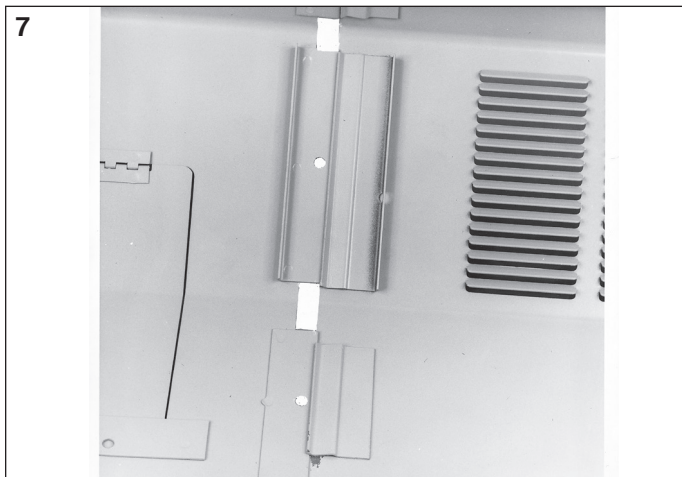


INSTALLATION

6. The first enclosure section should be set in place as noted by the Room Schedule (style S is shown at right). Engage the enclosure into the hanger strip, then into the bottom bend of the Enclosure Wall Support (EWS). Once in place, secure the enclosure to the bracket with a quarter turn of the hex headed enclosure latch.



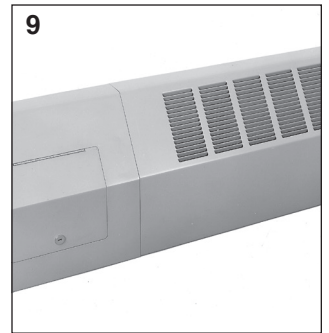
7. Adjoining sections of enclosure can be added to the first by means of interlocking slip-joints. The male strip always faces to the left, the concealed female clip always right. Start enclosure slip-joints from the top before engaging the hanger strip and EWS. Enclosures may be tapped together to protect the edge of the adjoining enclosure. As with the first enclosure, all other enclosures should be secured to the EWS by a quarter-turn of the built-in enclosure latch.



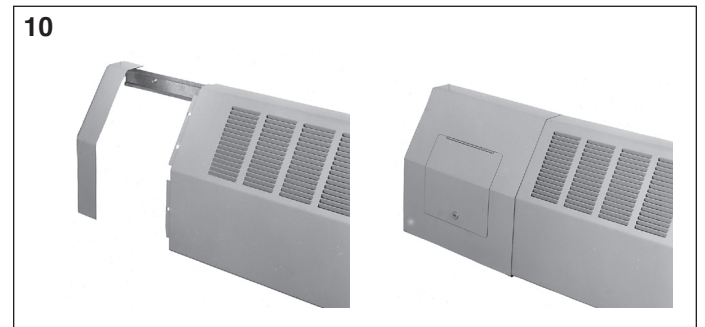
8. Enclosure End Caps terminate enclosure when not running wall-to-wall and join to enclosures with concealed slip-joints. Each end cap adds to the overall length of fin-tube enclosures. End Caps with access door are also available. For fin-tube covers, EM and FT end caps overlap.



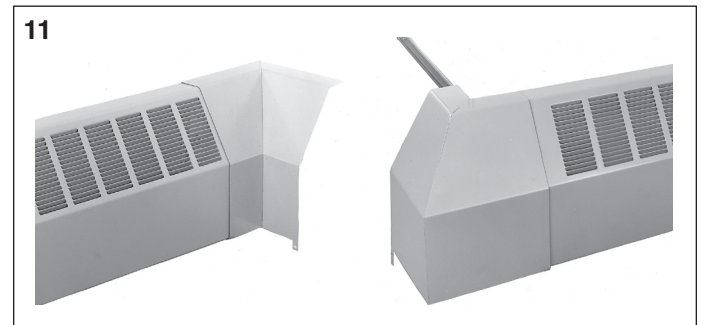
9. Valve Compartments have concealed interlocking slip-joints to mate up with enclosures to provide valve access within an enclosure run. Locate as directed on Room Schedule.



10. Enclosure extensions overlap enclosures and make up length differences when running to a wall. Place extension over enclosure, then bend tabs to secure the extension to the bottom of the enclosure.



11. Inside or Outside corners allow an enclosure run to continue around a corner. Corners overlap enclosures to make up length difference between walls. Corners have fold-over tabs. Place corner over enclosure, then bend tabs to secure the corner to the bottom of the enclosure.



SAMPLE SIZING CALCULATIONS

Example 1 - Hot Water At Decreased Flow

Determine fin tube length required:

Conditions:

Standard air temperature = 65°F
Average water temperature = 200°F
Water velocity = 1.0 ft/sec
Calculated heat loss of room = 20,000 Btu/hr.

Water Velocity Correction:

A water velocity correction factor must be used if the water velocity is other than the 3.0 ft/sec.

$$\frac{\text{Heat Loss}}{\text{Correction Factor}} = \text{Btu/hr if the water velocity is 3.0 ft/sec}$$

Water velocity correction factor for 1.0 ft/sec = .957 (Refer to Table 9.2 on page 9)

$$\frac{20,000 \text{ Btu/hr}}{0.957} = 20,899 \text{ Btu/hr if the water velocity is 3.0 ft/sec}$$

Selection of Unit:

A model 'S' Slope Top with an enclosure height of 12" and one row of 3/4" copper tube with aluminum fin size of 4-1/4" X 4-1/4" is desired.

Determine hot water ratings for desired tube and fin size (Refer to Table 15.1 on page 15):

$$34 \text{ fins/ft} = 1160 \text{ Btu/hr/ft} \quad \frac{20,899 \text{ Btu/hr}}{1160 \text{ Btu/hr/ft}} = 18.0 \text{ linear ft.}$$

$$42 \text{ fins/ft} = 1380 \text{ Btu/hr/ft} \quad \frac{20,899 \text{ Btu/hr}}{1380 \text{ Btu/hr/ft}} = 15.1 \text{ linear ft.}$$

$$50 \text{ fins/ft} = 1390 \text{ Btu/hr/ft} \quad \frac{20,899 \text{ Btu/hr}}{1390 \text{ Btu/hr/ft}} = 15.0 \text{ linear ft.}$$

Example 2 - Hot Water, Air And Water Temperature Other Than Standard

Determine fin tube length required:

Conditions:

Air temperature = 55°F
Average water temperature = 210°F
Water velocity = 3.0 ft/sec (standard)
Calculated heat loss of room = 20,000 Btu/hr.

Air And Water Temperature Correction:

A correction factor must be used if the air and/or water temperatures other than standard conditions

$$\frac{\text{Heat Loss}}{\text{Correction Factor}} = \text{Btu/hr if the air and/or water temperature are not standard}$$

Air and water correction factor = 1.05 (Refer to Table 10.2 on page 10)

$$\frac{20,000 \text{ Btu/hr}}{1.05} = 19,048 \text{ Btu/hr if standard conditions}$$

Selection of Unit:

A model 'S' Slope Top with an enclosure height of 18" and two rows of 3/4" copper tube with aluminum fin size of 4-1/4" X 4-1/4" is desired.

Determine hot water ratings for desired tube and fin size (Refer to Table 15.1 on page 15):

$$34 \text{ fins/ft} = 2130 \text{ Btu/hr/ft} \quad \frac{19,048 \text{ Btu/hr}}{2130 \text{ Btu/hr/ft}} = 8.9 \text{ linear ft., two rows}$$

$$42 \text{ fins/ft} = 2340 \text{ Btu/hr/ft} \quad \frac{19,048 \text{ Btu/hr}}{2340 \text{ Btu/hr/ft}} = 8.1 \text{ linear ft., two rows}$$

$$50 \text{ fins/ft} = 2560 \text{ Btu/hr/ft} \quad \frac{19,048 \text{ Btu/hr}}{2560 \text{ Btu/hr/ft}} = 7.4 \text{ linear ft., two rows}$$

SAMPLE SIZING CALCULATIONS

Example 3 - Steam Systems At Non-Standard Air Temperature And Steam Pressure

Determine fin tube length required:

Conditions:

Air temperature = 55°F
Steam pressure = 25 psi
Calculated heat loss of room = 25,000 Btu/hr.

Air Temperature And Steam Pressure Correction:

A model 'S' Slope Top with an enclosure height of 24" and three rows of 3/4" copper tube with aluminum fin size of 4-1/4" X 4-1/4" is desired.

A correction factor must be used for steam systems.

Standard Output X Correction Factor = Output at Conditions

34 fins/ft: 2630 Btu/hr/ft X 1.59 = 4182 Btu/hr/ft

42 fins/ft: 2910 Btu/hr/ft X 1.59 = 4627 Btu/hr/ft

50 fins/ft: 3160 Btu/hr/ft X 1.59 = 5024 Btu/hr/ft

Refer to Table 15.1 on page 15 for ratings
Refer to Table 10.3 on page 10 for correction factors

Selection of Unit:

Determine fin tube length required:

34 fins/ft = 4182 Btu/hr/ft $\frac{25,000 \text{ Btu/hr}}{4182 \text{ Btu/hr/ft}} = 6.0 \text{ linear ft.,}$
three rows

42 fins/ft = 4627 Btu/hr/ft $\frac{25,000 \text{ Btu/hr}}{4627 \text{ Btu/hr/ft}} = 5.4 \text{ linear ft.,}$
three rows

50 fins/ft = 5024 Btu/hr/ft $\frac{25,000 \text{ Btu/hr}}{5024 \text{ Btu/hr/ft}} = 5.0 \text{ linear ft.,}$
three rows

Example 4 - Ethylene Glycol Solution Correction

Determine fin tube length required:

Conditions:

Standard air temperature = 65°F
Average solution temperature = 150°F
Percent Ethylene Glycol = 50%
Calculated heat loss of room = 20,000 Btu/hr.

Ethylene Glycol Correction:

A model 'S' Slope Top with an enclosure height of 24" and one row of 3/4" copper tube with aluminum fin size of 4-1/4" X 4-1/4" is desired.

A correction factor must be used if an ethylene glycol solution is used.

Standard Output X Correction Factor = Output with 50% Glycol

34 fins/ft: 790 Btu/hr/ft X 0.90 = 711 Btu/hr/ft

42 fins/ft: 860 Btu/hr/ft X 0.90 = 774 Btu/hr/ft

50 fins/ft: 940 Btu/hr/ft X 0.90 = 846 Btu/hr/ft

Refer to Table 15.1 on page 15 for ratings
Refer to Table 10.1 on page 10 for correction factors

Selection of Unit:

Determine fin tube length required:

34 fins/ft = 711 Btu/hr/ft $\frac{20,000 \text{ Btu/hr}}{711 \text{ Btu/hr/ft}} = 28.1 \text{ linear ft.}$

42 fins/ft = 774 Btu/hr/ft $\frac{20,000 \text{ Btu/hr}}{774 \text{ Btu/hr/ft}} = 25.8 \text{ linear ft.}$

50 fins/ft = 846 Btu/hr/ft $\frac{20,000 \text{ Btu/hr}}{846 \text{ Btu/hr/ft}} = 23.6 \text{ linear ft.}$

CORRECTION FACTORS

Figure 10.1 - Expansion in Copper Tubing

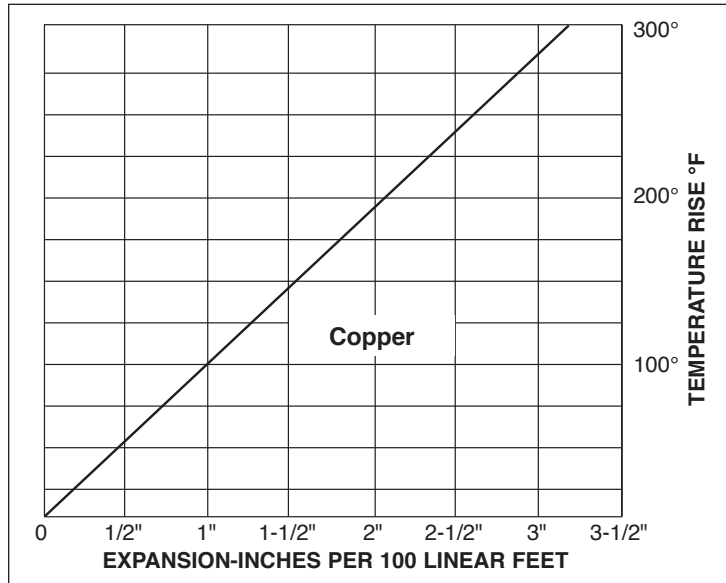


Table 10.1 - Converting AHRI Steam Ratings to Hot Water Ratings at Indicated Temperature ①

Average Water Temperature	Factor	Average Water Temperature	Factor
100	0.15	185	0.73
110	0.20	190	0.78
120	0.26	195	0.82
130	0.33	200	0.86
140	0.40	205	0.91
150	0.45	210	0.95
155	0.49	215	1.00
160	0.53	220	1.05
165	0.57	225	1.09
170	0.61	230	1.14
175	0.65	235	1.20
180	0.69	240	1.25

① Multiply correction factor x 1 PSI steam rating to determine Btu at actual water temperature rating.

Table 10.2 - Factors for Non-Standard Water Temperature and Air Temperature ②

Average Water Temp. °F	Entering Air Temperature °F									
	45	55	Std. 65	70	75	80	85	90	95	100
100	0.25	0.19	0.13	0.11	0.08	0.06				
110	0.31	0.25	0.19	0.16	0.13	0.11	0.08	0.06		
120	0.38	0.31	0.25	0.22	0.19	0.16	0.13	0.11	0.08	0.06
130	0.45	0.38	0.31	0.28	0.25	0.22	0.19	0.16	0.13	0.11
140	0.53	0.45	0.38	0.34	0.31	0.28	0.25	0.22	0.19	0.16
150	0.61	0.53	0.45	0.42	0.38	0.34	0.31	0.28	0.25	0.22
160	0.69	0.61	0.53	0.49	0.45	0.42	0.38	0.34	0.31	0.28
170	0.78	0.69	0.61	0.57	0.53	0.49	0.45	0.42	0.38	0.34
180	0.86	0.78	0.69	0.65	0.61	0.57	0.53	0.49	0.45	0.42
190	0.95	0.86	0.78	0.73	0.69	0.65	0.61	0.57	0.53	0.49
200	1.05	0.95	0.86	0.82	0.78	0.73	0.69	0.65	0.61	0.57
210	1.14	1.05	0.95	0.91	0.86	0.82	0.78	0.73	0.69	0.65

② Multiply correction factor x 1 PSI steam rating to determine Btu at non-standard water and air temperature.

Table 10.3 - Factors for Non-Standard Steam Pressure and Air Temperature ③

Steam Pressure psi	Entering Air Temperature °F									
	45	55	65	70	75	80	85	90	100	110
0.899	1.22	1.11	1.00	0.95	0.90	0.84	0.80	0.75	0.65	0.57
5	1.34	1.22	1.11	1.05	1.00	0.95	0.90	0.81	0.75	0.66
10	1.45	1.33	1.22	1.17	1.11	1.05	1.00	0.91	0.85	0.75
15	1.55	1.43	1.31	1.26	1.20	1.14	1.09	1.00	0.94	0.84
20	1.63	1.52	1.40	1.33	1.28	1.23	1.17	1.07	1.02	0.92
25	1.71	1.59	1.47	1.41	1.36	1.30	1.25	1.15	1.09	0.98
30	1.78	1.66	1.54	1.48	1.42	1.37	1.31	1.21	1.15	1.05
40	1.91	1.79	1.66	1.61	1.54	1.49	1.43	1.32	1.27	1.16
50	2.02	1.90	1.77	1.71	1.65	1.60	1.54	1.42	1.37	1.26
60	2.10	2.00	1.87	1.81	1.75	1.69	1.63	1.51	1.47	1.35
70	2.20	2.09	1.95	1.89	1.83	1.77	1.71	1.59	1.55	1.44
80	2.27	2.17	2.03	1.97	1.91	1.85	1.80	1.69	1.63	1.52
90	2.36	2.24	2.11	2.05	1.98	1.93	1.87	1.74	1.70	1.59
100	2.43	2.31	2.18	2.11	2.05	2.00	1.94	1.81	1.77	1.65
125	2.59	2.47	2.33	2.27	2.21	2.16	2.10	1.96	1.92	1.80
150	2.73	2.62	2.47	2.43	2.35	2.29	2.23	2.08	2.05	1.94
175	2.86	2.74	2.60	2.54	2.47	2.41	2.35	2.21	2.17	2.05
200	2.95	2.85	2.71	2.63	2.58	2.52	2.47	2.31	2.29	2.17

③ Multiply correction factor x 1 PSI steam rating to determine Btu at non-standard steam pressure and air temperature.

CORRECTION FACTORS

Table 11.1 - Ethylene Glycol Correction Factors ①

Solution Temperature (°F)	Ethylene Glycol Solution %						
	20%	30%	40%	50%	60%	70%	80%
100	0.99	0.96	0.93	0.89	0.85	0.81	0.76
150	0.99	0.96	0.94	0.90	0.87	0.83	0.78
200	0.99	0.97	0.94	0.92	0.88	0.85	0.81
250	0.98	0.96	0.94	0.92	0.89	0.86	0.82

① For Propylene Glycol solution correction factor, multiply Ethylene Glycol correction factor by 0.95.

Table 11.2 - Factors for Reduced G.P.M. and Velocity ①

Ft./Sec. Velocity	Gallons Per Minute			
	Copper			Correction Factor
	3/4" Dia.	1" Dia.	1-1/4" Dia.	
3.0	5.0	8.5	12.9	1.000
2.5	4.2	7.1	10.7	0.992
2.0	3.3	5.7	8.6	0.984
1.5	2.5	4.2	6.4	0.973
1.0	1.7	2.8	4.3	0.957
0.5	0.8	1.4	2.1	0.931
0.25	0.4	0.7	1.1	0.905

① The factors in this table may be used only when the water flow rate through the finned tube unit is known and where the flow rate is less than three feet per second. To determine the output at less than three feet per second, multiply the AHRI Water Rating by the factor in this table which applies to the known flow rate.

Table 11.3 - Factor for Enclosure Mounted Lower Than Recommended 4" Inlet Height ①

Enclosure	Inlet Height						
	4"	3"	2"	1-1/2"	1"	3/4"	1/2"
All Styles	1.00	1.00	0.99	0.97	0.85	0.63	0.40

① When inlet height is less than 4", use these Correction Factors to determine BTU at actual mounting height.

Table 11.4 - Factors for Enclosure Mounted Higher Than Recommended 4" Inlet Height ①

Enclosure	Total Height															
	18" or less	19"	20"	21"	22"	23"	24"	25"	26"	27"	28"	29"	30"	32"	34"	36" or more
S	1.10	1.09	1.09	1.08	1.07	1.07	1.06	1.05	1.05	1.04	1.03	1.03	1.02	1.01	1.01	1.00
R, F, FT, EM	1.15	1.14	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.05	1.04	1.03	1.02	1.01	1.00

① When enclosures are mounted more than 4" above floor, use the following formula to determine BTU at actual mounting height.

If the unit is to be installed at a different height than recommended, the AHRI Rating shall be adjusted as follows:

$$\frac{\text{Actual Mounting Height Factor}}{\text{Recommended Mounting Height Factor}} = \text{CORRECTION FACTOR}$$

EXAMPLE - S12

12 inch enclosure height + 4 inch inlet height = 16 inch recommended Mounting Height.
Change to 12 inch enclosure height + 12 inch inlet height = 24 inch actual Mounting Height.

Factors from Table 11.4:

At 16 inches, factor = 1.10 At 24 inches, factor = 1.06

$$\text{Apply to formula: } \frac{1.06}{1.10} = \text{CORRECTION FACTOR}$$

Correction Factor X Catalog Rating (BTU) = BTU at Actual Mounting Height.

MODEL SP SLOPE TOP TRIMFIN™ FEATURES

- Enclosure ② engages with concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, second and third row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- EWS ④ supports have integral enclosure lock.

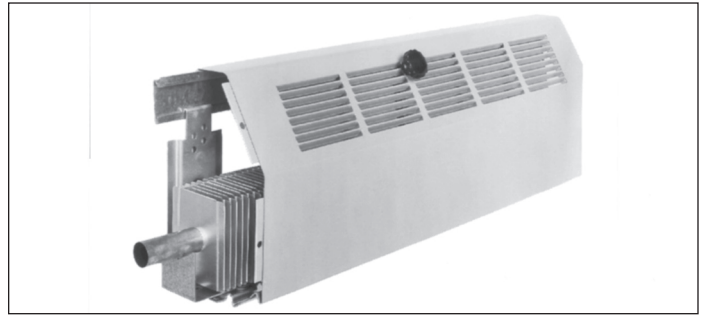
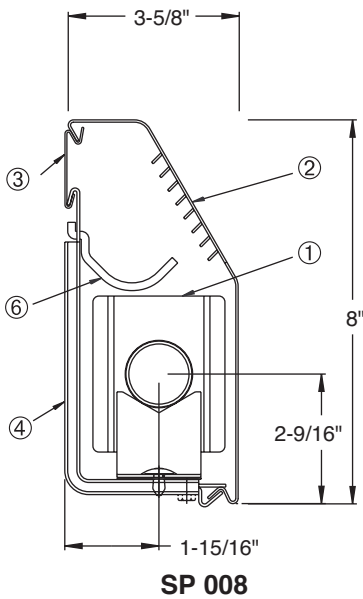
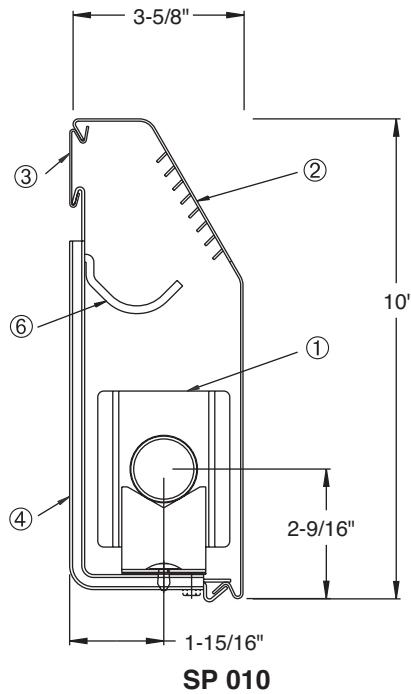


Figure 12.1 - System Components

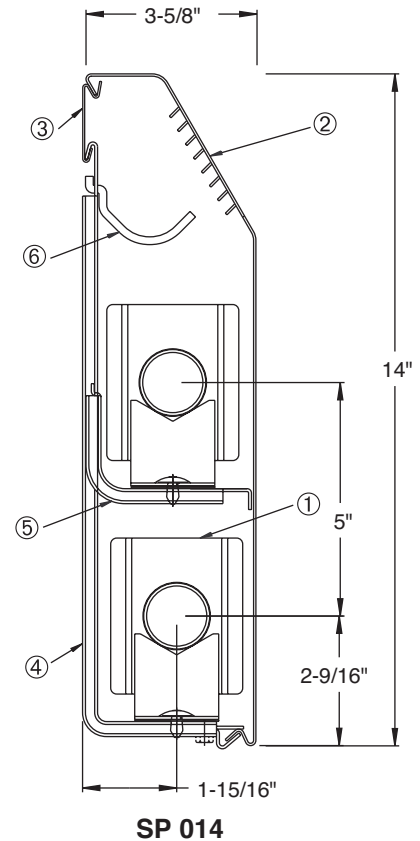
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger



SP 008



SP 010



SP 014

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 8, 10, and 14 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 18 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.

MODEL SP PERFORMANCE

Table 13.1 - Steam and Hot Water Ratings - Fin Size - 3-1/4" x 2-3/4"

FIN SIZE - 3-1/4" X 2-3/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	8	1	840	800	720	660	580	510	450	380	340
	10	1	860	820	740	670	590	520	460	390	340
	14	1	910	860	780	710	630	560	480	410	360
	14	2 @ 5"	1420	1350	1220	1110	980	870	750	640	570
3/4" Copper 42 Fins/ft.	8	1	910	860	780	710	630	560	480	410	360
	10	1	950	900	820	740	660	580	500	430	380
	14	1	1040	990	890	810	720	630	550	470	420
	14	2 @ 5"	1480	1410	1270	1150	1020	900	780	670	590
3/4" Copper 50 Fins/ft.	8	1	980	930	840	760	680	600	520	440	390
	10	1	1040	990	890	810	720	630	550	470	420
	14	1	1160	1100	1000	900	800	710	610	520	460
	14	2 @ 5"	1540	1460	1320	1200	1060	940	820	690	620
1" Copper 34 Fins/ft.	8	1	820	780	710	640	570	500	430	370	330
	10	1	850	810	730	660	590	520	450	380	340
	14	1	900	860	770	700	620	550	480	410	360
	14	2 @ 5"	1370	1300	1180	1070	950	840	730	620	550
1" Copper 42 Fins/ft.	8	1	880	840	760	690	610	540	470	400	350
	10	1	930	880	800	730	640	570	490	420	370
	14	1	1020	970	880	800	700	620	540	460	410
	14	2 @ 5"	1410	1340	1210	1100	970	860	750	630	560
1" Copper 50 Fins/ft.	8	1	940	890	810	730	650	570	500	420	380
	10	1	1010	960	870	790	700	620	540	450	400
	14	1	1130	1070	970	880	780	690	600	510	450
	14	2 @ 5"	1450	1380	1250	1130	1000	880	770	650	580
1-1/4" Copper 34 Fins/ft.	8	1	810	770	700	630	560	490	430	360	320
	10	1	840	800	720	660	580	510	450	380	340
	14	1	890	850	770	690	610	540	470	400	360
	14	2 @ 5"	1310	1240	1130	1020	900	800	690	590	520
1-1/4" Copper 42 Fins/ft.	8	1	860	820	740	670	590	520	460	390	340
	10	1	910	860	780	710	630	560	480	410	360
	14	1	1000	950	860	780	690	610	530	450	400
	14	2 @ 5"	1340	1270	1150	1050	920	820	710	600	540
1-1/4" Copper 50 Fins/ft.	8	1	910	860	780	710	630	560	480	410	360
	10	1	980	930	840	760	680	600	520	440	390
	14	1	1110	1050	950	870	770	680	590	500	440
	14	2 @ 5"	1360	1290	1170	1060	940	830	720	610	540

Table 13.2 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 2-3/4"

FIN SIZE - 4-1/4" X 2-3/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	10	1	960	910	830	750	660	590	510	430	380
	14	1	1030	980	890	800	710	630	550	460	410
3/4" Copper 42 Fins/ft.	10	1	1040	990	890	810	720	630	550	470	420
	14	1	1110	1050	950	870	770	680	590	500	440
3/4" Copper 50 Fins/ft.	10	1	1130	1070	970	880	780	690	600	510	450
	14	1	1170	1110	1010	910	810	710	620	530	470
1" Copper 34 Fins/ft.	10	1	950	900	820	740	660	580	500	430	380
	14	1	1010	960	870	790	700	620	540	450	400
1" Copper 42 Fins/ft.	10	1	1030	980	890	800	710	630	550	460	410
	14	1	1080	1030	930	840	750	660	570	490	430
1" Copper 50 Fins/ft.	10	1	1110	1050	950	870	770	680	590	500	440
	14	1	1160	1100	1000	900	800	710	610	520	460
1-1/4" Copper 34 Fins/ft.	10	1	940	890	810	730	650	570	500	420	380
	14	1	980	930	840	760	680	600	520	440	390
1-1/4" Copper 42 Fins/ft.	10	1	1020	970	880	800	700	620	540	460	410
	14	1	1060	1010	910	830	730	650	560	480	420
1-1/4" Copper 50 Fins/ft.	10	1	1100	1050	950	860	760	670	580	500	440
	14	1	1140	1080	980	890	790	700	600	510	460

- Bottom of enclosure mounted 2 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are 

MODEL S SLOPE TOP FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, second and third row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- EWS ④ supports have integral enclosure lock.

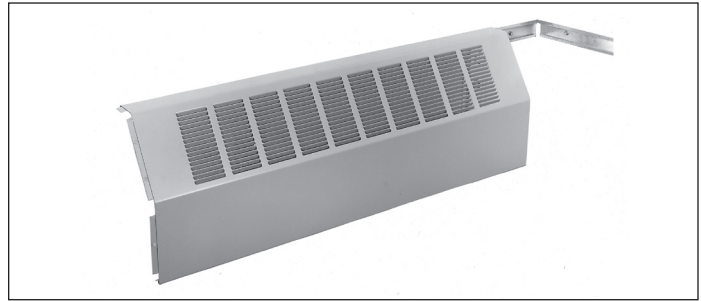
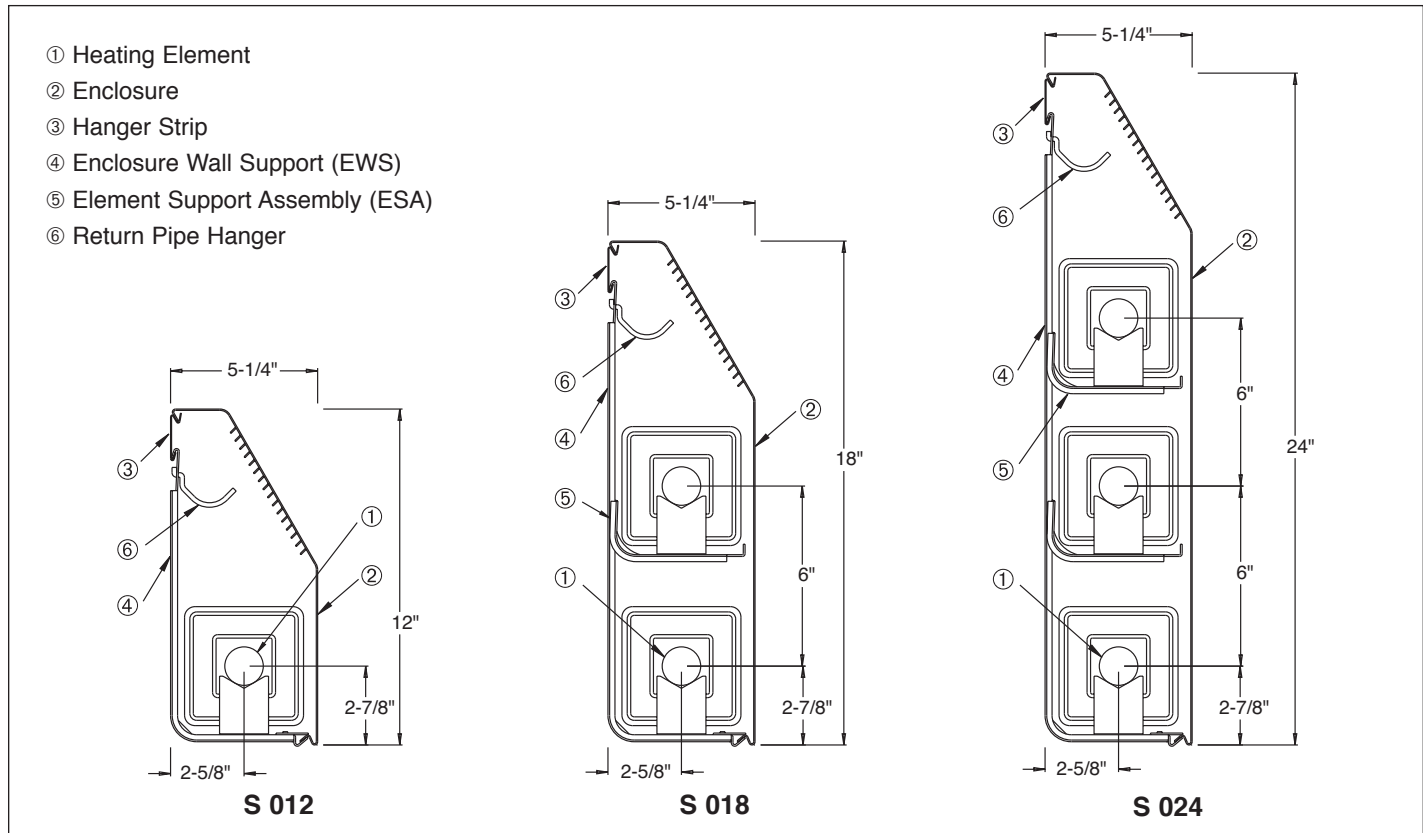


Figure 14.1 - System Components



Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 12, 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL S PERFORMANCE

Table 15.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1350	1280	1160	1050	930	820	720	610	540
	18	1	1660	1580	1430	1290	1150	1010	880	750	660
	24	1	1750	1660	1510	1370	1210	1070	930	790	700
	18	2 @ 6"	2130	2020	1830	1660	1470	1300	1130	960	850
	24	2 @ 6"	2250	2140	1940	1760	1550	1370	1190	1010	900
	24	2 @ 12"	2330	2210	2000	1820	1610	1420	1230	1050	930
	24	3 @ 6"	2630	2500	2260	2050	1810	1600	1390	1180	1050
	24	3 @ 6"	2630	2500	2260	2050	1810	1600	1390	1180	1050
3/4" Copper 42 Fins/ft.	12	1	1610	1530	1380	1260	1110	980	850	720	640
	18	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	1	1920	1820	1650	1500	1320	1170	1020	860	770
	18	2 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
	24	2 @ 6"	2480	2360	2130	1930	1710	1510	1310	1120	990
	24	2 @ 12"	2570	2440	2210	2000	1770	1570	1360	1160	1030
	24	3 @ 6"	2910	2760	2500	2270	2010	1780	1540	1310	1160
	24	3 @ 6"	2910	2760	2500	2270	2010	1780	1540	1310	1160
3/4" Copper 50 Fins/ft.	12	1	1620	1540	1390	1260	1120	990	860	730	650
	18	1	1980	1880	1700	1540	1370	1210	1050	890	790
	24	1	2090	1990	1800	1630	1440	1270	1110	940	840
	18	2 @ 6"	2560	2430	2200	2000	1770	1560	1360	1150	1020
	24	2 @ 6"	2700	2570	2320	2110	1860	1650	1430	1220	1080
	24	2 @ 12"	2800	2660	2410	2180	1930	1710	1480	1260	1120
	24	3 @ 6"	3160	3000	2720	2460	2180	1930	1670	1420	1260
	24	3 @ 6"	3160	3000	2720	2460	2180	1930	1670	1420	1260
1" Copper 34 Fins/ft.	12	1	1430	1360	1230	1120	990	870	760	640	570
	18	1	1740	1650	1500	1360	1200	1060	920	780	700
	24	1	1850	1760	1590	1440	1280	1130	980	830	740
	18	2 @ 6"	2250	2140	1940	1760	1550	1370	1190	1010	900
	24	2 @ 6"	2380	2260	2050	1860	1640	1450	1260	1070	950
	24	2 @ 12"	2460	2340	2120	1920	1700	1500	1300	1110	980
	24	3 @ 6"	2760	2620	2370	2150	1900	1680	1460	1240	1100
	24	3 @ 6"	2760	2620	2370	2150	1900	1680	1460	1240	1100
1" Copper 42 Fins/ft.	12	1	1610	1530	1380	1260	1110	980	850	720	640
	18	1	1910	1810	1640	1490	1320	1170	1010	860	760
	24	1	2020	1920	1740	1580	1390	1230	1070	910	810
	18	2 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980
	24	2 @ 6"	2600	2470	2240	2030	1790	1590	1380	1170	1040
	24	2 @ 12"	2700	2570	2320	2110	1860	1650	1430	1220	1080
	24	3 @ 6"	3050	2900	2620	2380	2100	1860	1620	1370	1220
	24	3 @ 6"	3050	2900	2620	2380	2100	1860	1620	1370	1220
1" Copper 50 Fins/ft.	12	1	1680	1600	1440	1310	1160	1020	890	760	670
	18	1	2050	1950	1760	1600	1410	1250	1090	920	820
	24	1	2160	2050	1860	1680	1490	1320	1140	970	860
	18	2 @ 6"	2650	2520	2280	2070	1830	1620	1400	1190	1060
	24	2 @ 6"	2800	2660	2410	2180	1930	1710	1480	1260	1120
	24	2 @ 12"	2900	2760	2490	2260	2000	1770	1540	1310	1160
	24	3 @ 6"	3280	3120	2820	2560	2260	2000	1740	1480	1310
	24	3 @ 6"	3280	3120	2820	2560	2260	2000	1740	1480	1310
1-1/4" Copper 34 Fins/ft.	12	1	1500	1430	1290	1170	1040	920	800	680	600
	18	1	1830	1740	1570	1430	1260	1120	970	820	730
	24	1	1940	1840	1670	1510	1340	1180	1030	870	780
	18	2 @ 6"	2370	2250	2040	1850	1640	1450	1260	1070	950
	24	2 @ 6"	2510	2380	2160	1960	1730	1530	1330	1130	1000
	24	2 @ 12"	2600	2470	2240	2030	1790	1590	1380	1170	1040
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
1-1/4" Copper 42 Fins/ft.	12	1	1610	1530	1380	1260	1110	980	850	720	640
	18	1	2000	1900	1720	1560	1380	1220	1060	900	800
	24	1	2120	2010	1820	1650	1460	1290	1120	950	850
	18	2 @ 6"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	24	2 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
	24	2 @ 12"	2840	2700	2440	2220	1960	1730	1510	1280	1140
	24	3 @ 6"	3200	3040	2750	2500	2210	1950	1700	1440	1280
	24	3 @ 6"	3200	3040	2750	2500	2210	1950	1700	1440	1280
1-1/4" Copper 50 Fins/ft.	12	1	1730	1640	1490	1350	1190	1060	920	780	690
	18	1	2120	2010	1820	1650	1460	1290	1120	950	850
	24	1	2240	2130	1930	1750	1550	1370	1190	1010	900
	18	2 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
	24	2 @ 6"	2890	2750	2490	2250	1990	1760	1530	1300	1160
	24	2 @ 12"	3000	2850	2580	2340	2070	1830	1590	1350	1200
	24	3 @ 6"	3380	3210	2910	2640	2330	2060	1790	1520	1350
	24	3 @ 6"	3380	3210	2910	2640	2330	2060	1790	1520	1350

- Bottom of enclosure mounted 2 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL S PERFORMANCE

Table 16.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1230	1170	1060	960	850	750	650	550	490
	18	1	1500	1430	1290	1170	1040	920	800	680	600
	24	1	1590	1510	1370	1240	1100	970	840	720	640
	18	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
	24	2 @ 6"	1990	1890	1710	1550	1370	1210	1050	900	800
3/4" Copper 42 Fins/ft.	24	2 @ 12"	2060	1960	1770	1610	1420	1260	1090	930	820
	24	3 @ 6"	2250	2140	1940	1760	1550	1370	1190	1010	900
	12	1	1400	1330	1200	1090	970	850	740	630	560
	18	1	1710	1620	1470	1330	1180	1040	910	770	680
	24	1	1810	1720	1560	1410	1250	1100	960	810	720
3/4" Copper 50 Fins/ft.	18	2 @ 6"	2140	2030	1840	1670	1480	1310	1130	960	860
	24	2 @ 6"	2260	2150	1940	1760	1560	1380	1200	1020	900
	24	2 @ 12"	2340	2220	2010	1830	1610	1430	1240	1050	940
	24	3 @ 6"	2560	2430	2200	2000	1770	1560	1360	1150	1020
	12	1	1580	1500	1360	1230	1090	960	840	710	630
1" Copper 34 Fins/ft.	18	1	1930	1830	1660	1510	1330	1180	1020	870	770
	24	1	2040	1940	1750	1590	1410	1240	1080	920	820
	18	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	24	2 @ 6"	2550	2420	2190	1990	1760	1560	1350	1150	1020
	24	2 @ 12"	2640	2510	2270	2060	1820	1610	1400	1190	1060
1" Copper 42 Fins/ft.	24	3 @ 6"	2880	2740	2480	2250	1990	1760	1530	1300	1150
	12	1	1220	1160	1050	950	840	740	650	550	490
	18	1	1480	1410	1270	1150	1020	900	780	670	590
	24	1	1560	1480	1340	1220	1080	950	830	700	620
	18	2 @ 6"	1850	1760	1590	1440	1280	1130	980	830	740
1" Copper 50 Fins/ft.	24	2 @ 6"	1960	1860	1690	1530	1350	1200	1040	880	780
	24	2 @ 12"	2030	1930	1750	1580	1400	1240	1080	910	810
	24	3 @ 6"	2200	2090	1890	1720	1520	1340	1170	990	880
	12	1	1390	1320	1200	1080	960	850	740	630	560
	18	1	1650	1570	1420	1290	1140	1010	870	740	660
1" Copper 34 Fins/ft.	24	1	1740	1650	1500	1360	1200	1060	920	780	700
	18	2 @ 6"	2060	1960	1770	1610	1420	1260	1090	930	820
	24	2 @ 6"	2180	2070	1870	1700	1500	1330	1160	980	870
	24	2 @ 12"	2260	2150	1940	1760	1560	1380	1200	1020	900
	24	3 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980
1" Copper 42 Fins/ft.	12	1	1560	1480	1340	1220	1080	950	830	700	620
	18	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	1	1930	1830	1660	1510	1330	1180	1020	870	770
	18	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	24	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
1" Copper 50 Fins/ft.	24	2 @ 12"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	24	3 @ 6"	2730	2590	2350	2130	1880	1670	1450	1230	1090
	12	1	1200	1140	1030	940	830	730	640	540	480
	18	1	1410	1340	1210	1100	970	860	750	630	560
	24	1	1490	1420	1280	1160	1030	910	790	670	600
1-1/4" Copper 34 Fins/ft.	18	2 @ 6"	1770	1680	1520	1380	1220	1080	940	800	710
	24	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
	24	2 @ 12"	1940	1840	1670	1510	1340	1180	1030	870	780
	24	3 @ 6"	2120	2010	1820	1650	1460	1290	1120	950	850
	12	1	1370	1300	1180	1070	950	840	730	620	550
1-1/4" Copper 42 Fins/ft.	18	1	1560	1480	1340	1220	1080	950	830	700	620
	24	1	1650	1570	1420	1290	1140	1010	870	740	660
	18	2 @ 6"	1960	1860	1690	1530	1350	1200	1040	880	780
	24	2 @ 6"	2070	1970	1780	1610	1430	1260	1100	930	830
	24	2 @ 12"	2140	2030	1840	1670	1480	1310	1130	960	860
1-1/4" Copper 50 Fins/ft.	24	3 @ 6"	2330	2210	2000	1820	1610	1420	1230	1050	930
	12	1	1540	1460	1320	1200	1060	940	820	690	620
	18	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	1	1820	1730	1570	1420	1260	1110	960	820	730
	18	2 @ 6"	2150	2040	1850	1680	1480	1310	1140	970	860
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	2270	2160	1950	1770	1570	1380	1200	1020	910
	24	2 @ 12"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	3 @ 6"	2560	2430	2200	2000	1770	1560	1360	1150	1020

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



PS SECURITY SLOPE TOP FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Heating Elements are supported by Inverted Element Bracket (IEB) ④.

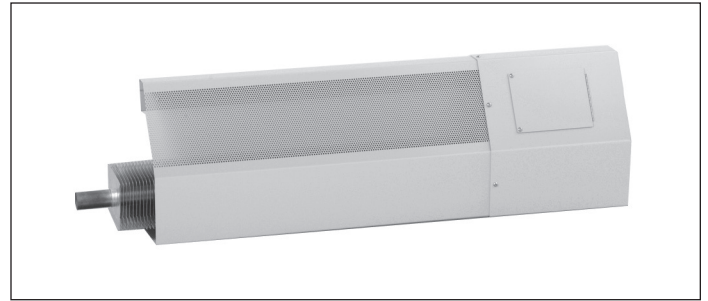
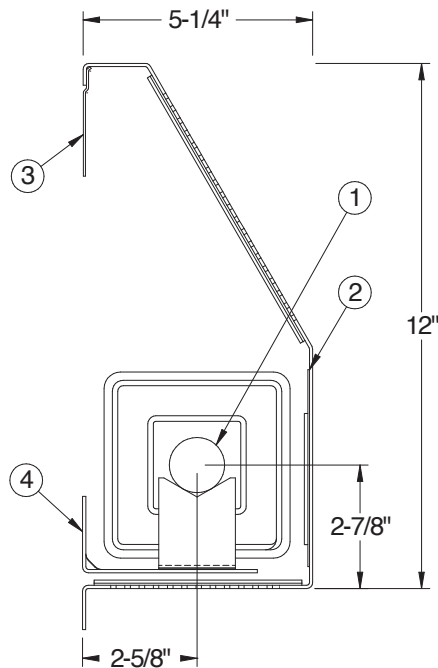


Figure 17.1 - System Components

- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Inverted Element Support Bracket (IEB)



PS 012

Standard Features

- Hanger strip - 16 gauge aluminized steel.
- Enclosure, 14 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Height of 12 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 14 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.

Options

- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Hanger strip with full back panel.
- Tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL PS PERFORMANCE

Table 18.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	960	910	830	750	660	590	510	430	380
3/4" Copper 42 Fins/ft.	12	1	1150	1090	990	900	790	700	610	520	460
3/4" Copper 50 Fins/ft.	12	1	1160	1100	1000	900	800	710	610	520	460
1" Copper 34 Fins/ft.	12	1	1020	970	880	800	700	620	540	460	410
1" Copper 42 Fins/ft.	12	1	1140	1080	980	890	790	700	600	510	460
1" Copper 50 Fins/ft.	12	1	1200	1140	1030	940	830	730	640	540	480
1-1/4" Copper 34 Fins/ft.	12	1	1070	1020	920	830	740	650	570	480	430
1-1/4" Copper 42 Fins/ft.	12	1	1150	1090	990	900	790	700	610	520	460
1-1/4" Copper 50 Fins/ft.	12	1	1130	1070	970	880	780	690	600	510	450

Table 18.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	880	840	760	690	610	540	470	400	350
3/4" Copper 42 Fins/ft.	12	1	1000	950	860	780	690	610	530	450	400
3/4" Copper 50 Fins/ft.	12	1	1090	1040	940	850	750	660	580	490	440
1" Copper 34 Fins/ft.	12	1	870	830	750	680	600	530	460	390	350
1" Copper 42 Fins/ft.	12	1	990	940	850	770	680	600	520	450	400
1" Copper 50 Fins/ft.	12	1	1120	1060	960	870	770	680	590	500	450
1-1/4" Copper 34 Fins/ft.	12	1	860	820	740	670	590	520	460	390	340
1-1/4" Copper 42 Fins/ft.	12	1	980	930	840	760	680	600	520	440	390
1-1/4" Copper 50 Fins/ft.	12	1	1100	1050	950	860	760	670	580	500	440

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL T TOP OUTLET FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, second and third row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- EWS ④ supports have integral enclosure lock.

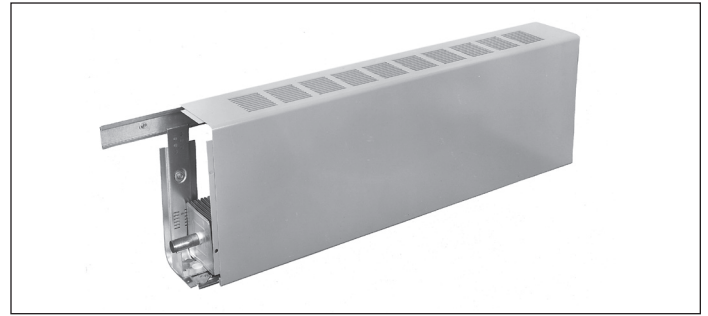
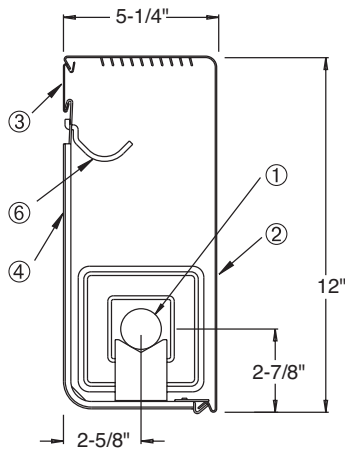
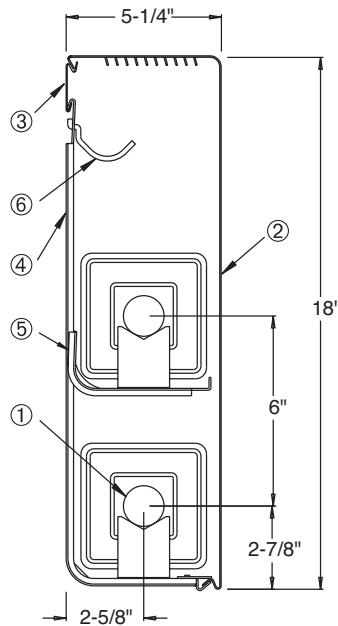


Figure 19.1 - System Components

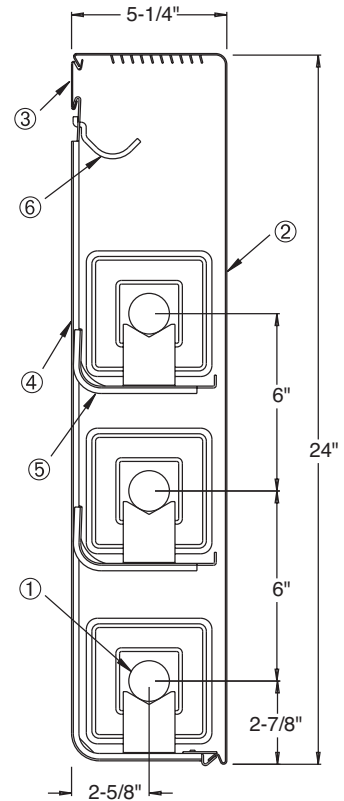
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger



T 012



T 018



T 024

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 12, 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL T PERFORMANCE

Table 20.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1240	1180	1070	970	860	760	660	560	500
	18	1	1480	1410	1270	1150	1020	900	780	670	590
	24	1	1520	1440	1310	1190	1050	930	810	680	610
	18	2 @ 6"	1900	1810	1630	1480	1310	1160	1010	860	760
	24	2 @ 6"	1950	1850	1680	1520	1350	1190	1030	880	780
	24	2 @ 12"	2020	1920	1740	1580	1390	1230	1070	910	810
3/4" Copper 42 Fins/ft.	24	3 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	12	1	1370	1300	1180	1070	950	840	730	620	550
	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1660	1580	1430	1290	1150	1010	880	750	660
	18	2 @ 6"	2090	1990	1800	1630	1440	1270	1110	940	840
	24	2 @ 6"	2140	2030	1840	1670	1480	1310	1130	960	860
3/4" Copper 50 Fins/ft.	24	2 @ 12"	2220	2110	1910	1730	1530	1350	1180	1000	890
	24	3 @ 6"	2520	2390	2170	1970	1740	1540	1340	1130	1010
	12	1	1490	1420	1280	1160	1030	910	790	670	600
	18	1	1760	1670	1510	1370	1210	1070	930	790	700
	24	1	1810	1720	1560	1410	1250	1100	960	810	720
	18	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
1" Copper 34 Fins/ft.	24	2 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
	24	2 @ 12"	2430	2310	2090	1900	1680	1480	1290	1090	970
	24	3 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
	12	1	1310	1240	1130	1020	900	800	690	590	520
	18	1	1610	1530	1380	1260	1110	980	850	720	640
	24	1	1770	1680	1520	1380	1220	1080	940	800	710
1" Copper 42 Fins/ft.	18	2 @ 6"	2080	1980	1790	1620	1440	1270	1100	940	830
	24	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	24	2 @ 12"	2370	2250	2040	1850	1640	1450	1260	1070	950
	24	3 @ 6"	2650	2520	2280	2070	1830	1620	1400	1190	1060
	12	1	1430	1360	1230	1120	990	870	760	640	570
	18	1	1760	1670	1510	1370	1210	1070	930	790	700
1" Copper 50 Fins/ft.	24	1	1940	1840	1670	1510	1340	1180	1030	870	780
	18	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	24	2 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	24	2 @ 12"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
	12	1	1540	1460	1320	1200	1060	940	820	690	620
1-1/4" Copper 34 Fins/ft.	18	1	1890	1800	1630	1470	1300	1150	1000	850	760
	24	1	2080	1980	1790	1620	1440	1270	1100	940	830
	18	2 @ 6"	2450	2330	2110	1910	1690	1490	1300	1100	980
	24	2 @ 6"	2690	2560	2310	2100	1860	1640	1430	1210	1080
	24	2 @ 12"	2780	2640	2390	2170	1920	1700	1470	1250	1110
	24	3 @ 6"	3150	2990	2710	2460	2170	1920	1670	1420	1260
1-1/4" Copper 42 Fins/ft.	12	1	1380	1310	1190	1080	950	840	730	620	550
	18	1	1700	1620	1460	1330	1170	1040	900	770	680
	24	1	1860	1770	1600	1450	1280	1130	990	840	740
	18	2 @ 6"	2190	2080	1880	1710	1510	1340	1160	990	880
	24	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	24	2 @ 12"	2490	2370	2140	1940	1720	1520	1320	1120	1000
1-1/4" Copper 50 Fins/ft.	24	3 @ 6"	2810	2670	2420	2190	1940	1710	1490	1260	1120
	12	1	1500	1430	1290	1170	1040	920	800	680	600
	18	1	1850	1760	1590	1440	1280	1130	980	830	740
	24	1	2030	1930	1750	1580	1400	1240	1080	910	810
	18	2 @ 6"	2390	2270	2060	1860	1650	1460	1270	1080	960
	24	2 @ 6"	2630	2500	2260	2050	1810	1600	1390	1180	1050
1-1/4" Copper 50 Fins/ft.	24	2 @ 12"	2720	2580	2340	2120	1880	1660	1440	1220	1090
	24	3 @ 6"	3070	2920	2640	2390	2120	1870	1630	1380	1230
	12	1	1590	1510	1370	1240	1100	970	840	720	640
	18	1	1960	1860	1690	1530	1350	1200	1040	880	780
	24	1	2150	2040	1850	1680	1480	1310	1140	970	860
	18	2 @ 6"	2530	2400	2180	1970	1750	1540	1340	1140	1010
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	2780	2640	2390	2170	1920	1700	1470	1250	1110
	24	2 @ 12"	2880	2740	2480	2250	1990	1760	1530	1300	1150
	24	3 @ 6"	3250	3090	2800	2540	2240	1980	1720	1460	1300
	24	3 @ 6"	3250	3090	2800	2540	2240	1980	1720	1460	1300

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL T PERFORMANCE

Table 21.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1130	1070	970	880	780	690	600	510	450
	18	1	1340	1270	1150	1050	920	820	710	600	540
	24	1	1380	1310	1190	1080	950	840	730	620	550
	18	2 @ 6"	1680	1600	1440	1310	1160	1020	890	760	670
	24	2 @ 6"	1720	1630	1480	1340	1190	1050	910	770	690
	24	2 @ 12"	1790	1700	1540	1400	1240	1090	950	810	720
	24	3 @ 6"	1950	1850	1680	1520	1350	1190	1030	880	780
3/4" Copper 42 Fins/ft.	12	1	1310	1240	1130	1020	900	800	690	590	520
	18	1	1500	1430	1290	1170	1040	920	800	680	600
	24	1	1570	1490	1350	1220	1080	960	830	710	630
	18	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	1960	1860	1690	1530	1350	1200	1040	880	780
	24	2 @ 12"	2030	1930	1750	1580	1400	1240	1080	910	810
	24	3 @ 6"	2220	2110	1910	1730	1530	1350	1180	1000	890
3/4" Copper 50 Fins/ft.	12	1	1450	1380	1250	1130	1000	880	770	650	580
	18	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	1	1770	1680	1520	1380	1220	1080	940	800	710
	18	2 @ 6"	2150	2040	1850	1680	1480	1310	1140	970	860
	24	2 @ 6"	2210	2100	1900	1720	1520	1350	1170	990	880
	24	2 @ 12"	2290	2180	1970	1790	1580	1400	1210	1030	920
	24	3 @ 6"	2490	2370	2140	1940	1720	1520	1320	1120	1000
1" Copper 34 Fins/ft.	12	1	1110	1050	950	870	770	680	590	500	440
	18	1	1370	1300	1180	1070	950	840	730	620	550
	24	1	1500	1430	1290	1170	1040	920	800	680	600
	18	2 @ 6"	1710	1620	1470	1330	1180	1040	910	770	680
	24	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
	24	2 @ 12"	1950	1850	1680	1520	1350	1190	1030	880	780
	24	3 @ 6"	2110	2000	1810	1650	1460	1290	1120	950	840
1" Copper 42 Fins/ft.	12	1	1240	1180	1070	970	860	760	660	560	500
	18	1	1530	1450	1320	1190	1060	930	810	690	610
	24	1	1670	1590	1440	1300	1150	1020	890	750	670
	18	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	2090	1990	1800	1630	1440	1270	1110	940	840
	24	2 @ 12"	2170	2060	1870	1690	1500	1320	1150	980	870
	24	3 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
1" Copper 50 Fins/ft.	12	1	1370	1300	1180	1070	950	840	730	620	550
	18	1	1690	1610	1450	1320	1170	1030	900	760	680
	24	1	1850	1760	1590	1440	1280	1130	980	830	740
	18	2 @ 6"	2110	2000	1810	1650	1460	1290	1120	950	840
	24	2 @ 6"	2310	2190	1990	1800	1590	1410	1220	1040	920
	24	2 @ 12"	2400	2280	2060	1870	1660	1460	1270	1080	960
	24	3 @ 6"	2620	2490	2250	2040	1810	1600	1390	1180	1050
1-1/4" Copper 34 Fins/ft.	12	1	1060	1010	910	830	730	650	560	480	420
	18	1	1300	1240	1120	1010	900	790	690	590	520
	24	1	1430	1360	1230	1120	990	870	760	640	570
	18	2 @ 6"	1640	1560	1410	1280	1130	1000	870	740	660
	24	2 @ 6"	1800	1710	1550	1400	1240	1100	950	810	720
	24	2 @ 12"	1870	1780	1610	1460	1290	1140	990	840	750
	24	3 @ 6"	2040	1940	1750	1590	1410	1240	1080	920	820
1-1/4" Copper 42 Fins/ft.	12	1	1180	1120	1010	920	810	720	630	530	470
	18	1	1450	1380	1250	1130	1000	880	770	650	580
	24	1	1590	1510	1370	1240	1100	970	840	720	640
	18	2 @ 6"	1810	1720	1560	1410	1250	1100	960	810	720
	24	2 @ 6"	1990	1890	1710	1550	1370	1210	1050	900	800
	24	2 @ 12"	2060	1960	1770	1610	1420	1260	1090	930	820
	24	3 @ 6"	2240	2130	1930	1750	1550	1370	1190	1010	900
1-1/4" Copper 50 Fins/ft.	12	1	1290	1230	1110	1010	890	790	680	580	520
	18	1	1590	1510	1370	1240	1100	970	840	720	640
	24	1	1740	1650	1500	1360	1200	1060	920	780	700
	18	2 @ 6"	1990	1890	1710	1550	1370	1210	1050	900	800
	24	2 @ 6"	2180	2070	1870	1700	1500	1330	1160	980	870
	24	2 @ 12"	2260	2150	1940	1760	1560	1380	1200	1020	900
	24	3 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL F FRONT OUTLET FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, second and third row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- EWS ④ supports have integral enclosure lock.

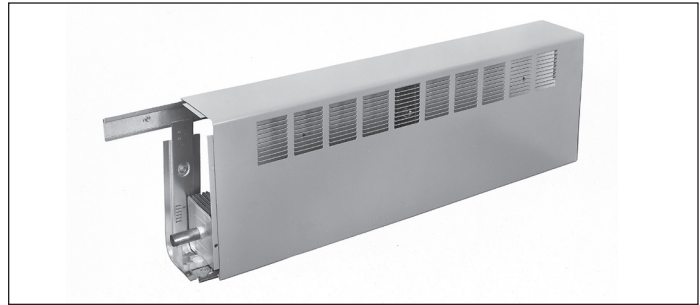
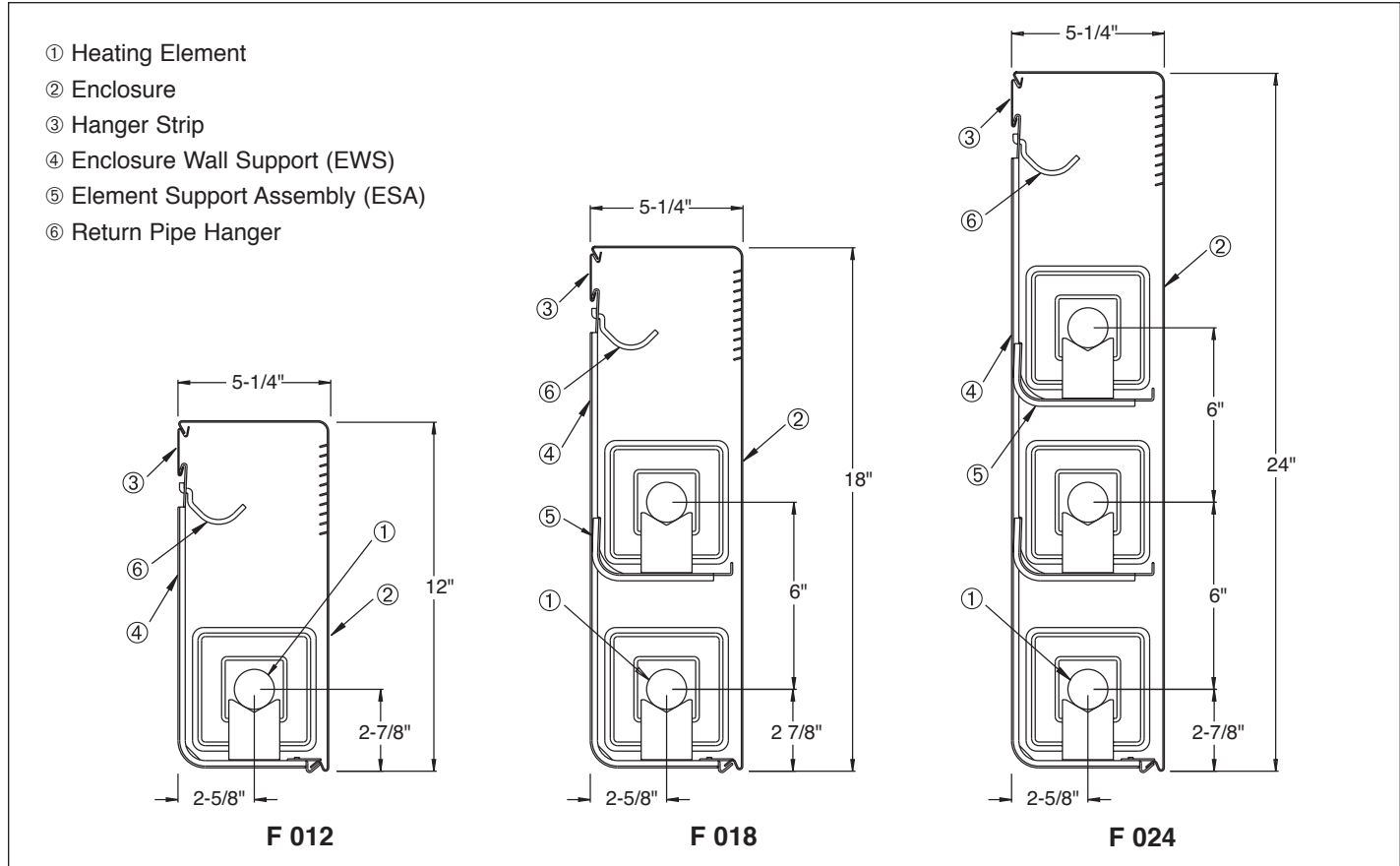


Figure 22.1 - System Components



Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 12, 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL F PERFORMANCE

Table 23.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1350	1280	1160	1050	930	820	720	610	540
	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1680	1600	1440	1310	1160	1020	890	760	670
	18	2 @ 6"	2080	1980	1790	1620	1440	1270	1100	940	830
	24	2 @ 6"	2160	2050	1860	1680	1490	1320	1140	970	860
	24	2 @ 12"	2240	2130	1930	1750	1550	1370	1190	1010	900
3/4" Copper 42 Fins/ft.	24	3 @ 6"	2520	2390	2170	1970	1740	1540	1340	1130	1010
	12	1	1480	1410	1270	1150	1020	900	780	670	590
	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1840	1750	1580	1440	1270	1120	980	830	740
	18	2 @ 6"	2290	2180	1970	1790	1580	1400	1210	1030	920
	24	2 @ 6"	2380	2260	2050	1860	1640	1450	1260	1070	950
3/4" Copper 50 Fins/ft.	24	2 @ 12"	2460	2340	2120	1920	1700	1500	1300	1110	980
	24	3 @ 6"	2800	2660	2410	2180	1930	1710	1480	1260	1120
	12	1	1610	1530	1380	1260	1110	980	850	720	640
	18	1	1930	1830	1660	1510	1330	1180	1020	870	770
	24	1	2010	1910	1730	1570	1390	1230	1070	900	800
	18	2 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
1" Copper 34 Fins/ft.	24	2 @ 6"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	24	2 @ 12"	2690	2560	2310	2100	1860	1640	1430	1210	1080
	24	3 @ 6"	3040	2890	2610	2370	2100	1850	1610	1370	1220
	12	1	1420	1350	1220	1110	980	870	750	640	570
	18	1	1700	1620	1460	1330	1170	1040	900	770	680
	24	1	1770	1680	1520	1380	1220	1080	940	800	710
1" Copper 42 Fins/ft.	18	2 @ 6"	2200	2090	1890	1720	1520	1340	1170	990	880
	24	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	24	2 @ 12"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	3 @ 6"	2650	2520	2280	2070	1830	1620	1400	1190	1060
	12	1	1550	1470	1330	1210	1070	950	820	700	620
	18	1	1860	1770	1600	1450	1280	1130	990	840	740
1" Copper 50 Fins/ft.	24	1	1940	1840	1670	1510	1340	1180	1030	870	780
	18	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	24	2 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	24	2 @ 12"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
	12	1	1670	1590	1440	1300	1150	1020	890	750	670
1-1/4" Copper 34 Fins/ft.	18	1	2000	1900	1720	1560	1380	1220	1060	900	800
	24	1	2080	1980	1790	1620	1440	1270	1100	940	830
	18	2 @ 6"	2580	2450	2220	2010	1780	1570	1370	1160	1030
	24	2 @ 6"	2680	2550	2300	2090	1850	1630	1420	1210	1070
	24	2 @ 12"	2780	2640	2390	2170	1920	1700	1470	1250	1110
	24	3 @ 6"	3150	2990	2710	2460	2170	1920	1670	1420	1260
1-1/4" Copper 42 Fins/ft.	12	1	1490	1420	1280	1160	1030	910	790	670	600
	18	1	1790	1700	1540	1400	1240	1090	950	810	720
	24	1	1860	1770	1600	1450	1280	1130	990	840	740
	18	2 @ 6"	2320	2200	2000	1810	1600	1420	1230	1040	930
	24	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	24	2 @ 12"	2490	2370	2140	1940	1720	1520	1320	1120	1000
1-1/4" Copper 50 Fins/ft.	24	3 @ 6"	2810	2670	2420	2190	1940	1710	1490	1260	1120
	12	1	1630	1550	1400	1270	1120	990	860	730	650
	18	1	1950	1850	1680	1520	1350	1190	1030	880	780
	24	1	2030	1930	1750	1580	1400	1240	1080	910	810
	18	2 @ 6"	2530	2400	2180	1970	1750	1540	1340	1140	1010
	24	2 @ 6"	2620	2490	2250	2040	1810	1600	1390	1180	1050
1-1/4" Copper 50 Fins/ft.	24	2 @ 12"	2720	2580	2340	2120	1880	1660	1440	1220	1090
	24	3 @ 6"	3070	2920	2640	2390	2120	1870	1630	1380	1230
	12	1	1720	1630	1480	1340	1190	1050	910	770	690
	18	1	2070	1970	1780	1610	1430	1260	1100	930	830
	24	1	2150	2040	1850	1680	1480	1310	1140	970	860
	18	2 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	2780	2640	2390	2170	1920	1700	1470	1250	1110
	24	2 @ 12"	2880	2740	2480	2250	1990	1760	1530	1300	1150
	24	3 @ 6"	3240	3080	2790	2530	2240	1980	1720	1460	1300

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL F PERFORMANCE

Table 24.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1230	1170	1060	960	850	750	650	550	490
	18	1	1470	1400	1260	1150	1010	900	780	660	590
	24	1	1530	1450	1320	1190	1060	930	810	690	610
	18	2 @ 6"	1840	1750	1580	1440	1270	1120	980	830	740
3/4" Copper 42 Fins/ft.	24	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 12"	1980	1880	1700	1540	1370	1210	1050	890	790
	24	3 @ 6"	2160	2050	1860	1680	1490	1320	1140	970	860
	12	1	1400	1330	1200	1090	970	850	740	630	560
3/4" Copper 50 Fins/ft.	18	1	1670	1590	1440	1300	1150	1020	890	750	670
	24	1	1740	1650	1500	1360	1200	1060	920	780	700
	18	2 @ 6"	2090	1990	1800	1630	1440	1270	1110	940	840
	24	2 @ 6"	2170	2060	1870	1690	1500	1320	1150	980	870
3/4" Copper 50 Fins/ft.	24	2 @ 12"	2250	2140	1940	1760	1550	1370	1190	1010	900
	24	3 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980
	12	1	1570	1490	1350	1220	1080	960	830	710	630
	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
1" Copper 34 Fins/ft.	24	1	1960	1860	1690	1530	1350	1200	1040	880	780
	18	2 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	2 @ 6"	2450	2330	2110	1910	1690	1490	1300	1100	980
	24	2 @ 12"	2540	2410	2180	1980	1750	1550	1350	1140	1020
1" Copper 42 Fins/ft.	24	3 @ 6"	2760	2620	2370	2150	1900	1680	1460	1240	1100
	12	1	1200	1140	1030	940	830	730	640	540	480
	18	1	1440	1370	1240	1120	990	880	760	650	580
	24	1	1500	1430	1290	1170	1040	920	800	680	600
1" Copper 42 Fins/ft.	18	2 @ 6"	1810	1720	1560	1410	1250	1100	960	810	720
	24	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
	24	2 @ 12"	1950	1850	1680	1520	1350	1190	1030	880	780
	24	3 @ 6"	2110	2000	1810	1650	1460	1290	1120	950	840
1" Copper 50 Fins/ft.	12	1	1340	1270	1150	1050	920	820	710	600	540
	18	1	1610	1530	1380	1260	1110	980	850	720	640
	24	1	1670	1590	1440	1300	1150	1020	890	750	670
	18	2 @ 6"	2010	1910	1730	1570	1390	1230	1070	900	800
1" Copper 50 Fins/ft.	24	2 @ 6"	2090	1990	1800	1630	1440	1270	1110	940	840
	24	2 @ 12"	2170	2060	1870	1690	1500	1320	1150	980	870
	24	3 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	12	1	1490	1420	1280	1160	1030	910	790	670	600
1-1/4" Copper 34 Fins/ft.	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1850	1760	1590	1440	1280	1130	980	830	740
	18	2 @ 6"	2230	2120	1920	1740	1540	1360	1180	1000	890
	24	2 @ 6"	2310	2190	1990	1800	1590	1410	1220	1040	920
1-1/4" Copper 42 Fins/ft.	24	2 @ 12"	2400	2280	2060	1870	1660	1460	1270	1080	960
	24	3 @ 6"	2620	2490	2250	2040	1810	1600	1390	1180	1050
	12	1	1150	1090	990	900	790	700	610	520	460
	18	1	1380	1310	1190	1080	950	840	730	620	550
1-1/4" Copper 50 Fins/ft.	24	1	1430	1360	1230	1120	990	870	760	640	570
	18	2 @ 6"	1730	1640	1490	1350	1190	1060	920	780	690
	24	2 @ 6"	1800	1710	1550	1400	1240	1100	950	810	720
	24	2 @ 12"	1860	1770	1600	1450	1280	1130	990	840	740
1-1/4" Copper 50 Fins/ft.	24	3 @ 6"	2040	1940	1750	1590	1410	1240	1080	920	820
	12	1	1280	1220	1100	1000	880	780	680	580	510
	18	1	1530	1450	1320	1190	1060	930	810	690	610
	24	1	1590	1510	1370	1240	1100	970	840	720	640
1-1/4" Copper 50 Fins/ft.	18	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	1990	1890	1710	1550	1370	1210	1050	900	800
	24	2 @ 12"	2060	1960	1770	1610	1420	1260	1090	930	820
	24	3 @ 6"	2230	2120	1920	1740	1540	1360	1180	1000	890
1-1/4" Copper 50 Fins/ft.	12	1	1400	1330	1200	1090	970	850	740	630	560
	18	1	1680	1600	1440	1310	1160	1020	890	760	670
	24	1	1740	1650	1500	1360	1200	1060	920	780	700
	18	2 @ 6"	2100	2000	1810	1640	1450	1280	1110	950	840
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	2180	2070	1870	1700	1500	1330	1160	980	870
	24	2 @ 12"	2260	2150	1940	1760	1560	1380	1200	1020	900
	24	3 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980

• Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.

• Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.

• Finned length is the specified element length - 6" (3" plain end each side).

MODEL R FRONT AND TOP OUTLET FEATURES

- Enclosure (2) engages concealed Hanger Strip (3).
- Enclosure Wall Support (EWS) (4) hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS (4) supports Heating Element (1), second and third row Element Support Assembly (ESA) (5) and Return Pipe Hanger (6) without fasteners.
- EWS (4) supports have integral enclosure lock.

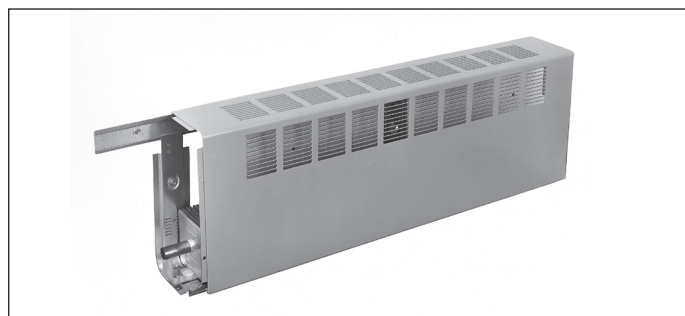
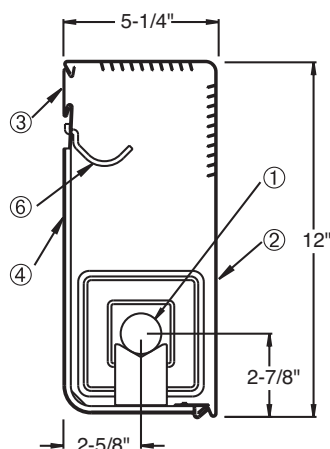
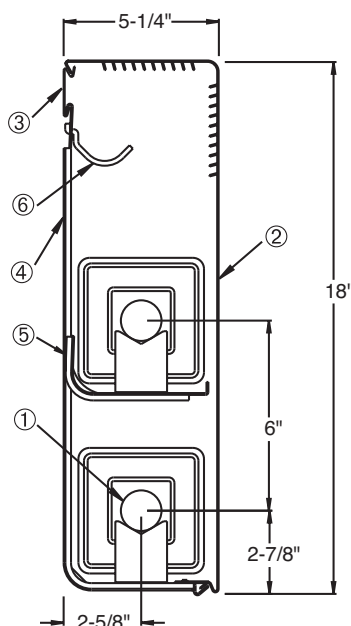


Figure 25.1 - System Components

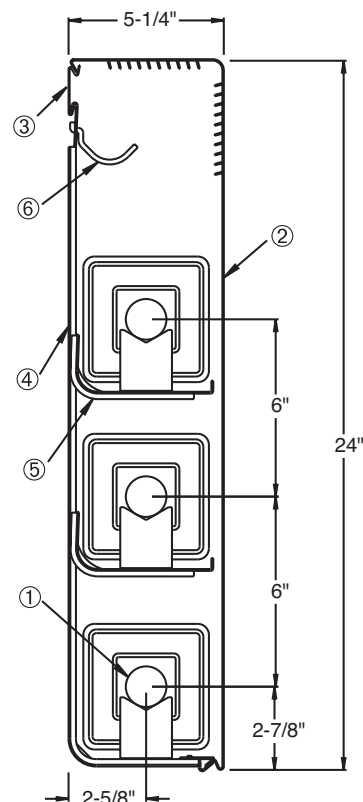
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger



R 012



R 018



R 024

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 12, 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL R PERFORMANCE

Table 26.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper	12	1	1400	1330	1200	1090	970	850	740	630	560
	18	1	1710	1620	1470	1330	1180	1040	910	770	680
	24	1	1830	1740	1570	1430	1260	1120	970	820	730
34 Fins/ft.	18	2 @ 6"	2200	2090	1890	1720	1520	1340	1170	990	880
	24	2 @ 6"	2350	2230	2020	1830	1620	1430	1250	1060	940
	24	2 @ 12"	2430	2310	2090	1900	1680	1480	1290	1090	970
3/4" Copper	24	3 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
	12	1	1540	1460	1320	1200	1060	940	820	690	620
	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
42 Fins/ft.	24	1	2000	1900	1720	1560	1380	1220	1060	900	800
	18	2 @ 6"	2420	2300	2080	1890	1670	1480	1280	1090	970
	24	2 @ 6"	2580	2450	2220	2010	1780	1570	1370	1160	1030
3/4" Copper	24	2 @ 12"	2680	2550	2300	2090	1850	1630	1420	1210	1070
	24	3 @ 6"	3040	2890	2610	2370	2100	1850	1610	1370	1220
3/4" Copper	12	1	1670	1590	1440	1300	1150	1020	890	750	670
	18	1	2040	1940	1750	1590	1410	1240	1080	920	820
	24	1	2180	2070	1870	1700	1500	1330	1160	980	870
50 Fins/ft.	18	2 @ 6"	2640	2510	2270	2060	1820	1610	1400	1190	1060
	24	2 @ 6"	2820	2680	2430	2200	1950	1720	1490	1270	1130
	24	2 @ 12"	2920	2770	2510	2280	2010	1780	1550	1310	1170
1" Copper	24	3 @ 6"	3300	3140	2840	2570	2280	2010	1750	1490	1320
	12	1	1470	1400	1260	1150	1010	900	780	660	590
	18	1	1800	1710	1550	1400	1240	1100	950	810	720
34 Fins/ft.	24	1	1920	1820	1650	1500	1320	1170	1020	860	770
	18	2 @ 6"	2320	2200	2000	1810	1600	1420	1230	1040	930
	24	2 @ 6"	2480	2360	2130	1930	1710	1510	1310	1120	990
1" Copper	24	2 @ 12"	2570	2440	2210	2000	1770	1570	1360	1160	1030
	24	3 @ 6"	2880	2740	2480	2250	1990	1760	1530	1300	1150
1" Copper	12	1	1610	1530	1380	1260	1110	980	850	720	640
	18	1	1970	1870	1690	1540	1360	1200	1040	890	790
	24	1	2100	2000	1810	1640	1450	1280	1110	950	840
42 Fins/ft.	18	2 @ 6"	2540	2410	2180	1980	1750	1550	1350	1140	1020
	24	2 @ 6"	2710	2570	2330	2110	1870	1650	1440	1220	1080
	24	2 @ 12"	2810	2670	2420	2190	1940	1710	1490	1260	1120
1" Copper	24	3 @ 6"	3180	3020	2730	2480	2190	1940	1690	1430	1270
	12	1	1730	1640	1490	1350	1190	1060	920	780	690
	18	1	2110	2000	1810	1650	1460	1290	1120	950	840
50 Fins/ft.	24	1	2250	2140	1940	1760	1550	1370	1190	1010	900
	18	2 @ 6"	2730	2590	2350	2130	1880	1670	1450	1230	1090
	24	2 @ 6"	2910	2760	2500	2270	2010	1780	1540	1310	1160
1" Copper	24	2 @ 12"	3020	2870	2600	2360	2080	1840	1600	1360	1210
	24	3 @ 6"	3420	3250	2940	2670	2360	2090	1810	1540	1370
1-1/4" Copper	12	1	1550	1470	1330	1210	1070	950	820	700	620
	18	1	1890	1800	1630	1470	1300	1150	1000	850	760
	24	1	2020	1920	1740	1580	1390	1230	1070	910	810
34 Fins/ft.	18	2 @ 6"	2450	2330	2110	1910	1690	1490	1300	1100	980
	24	2 @ 6"	2610	2480	2240	2040	1800	1590	1380	1170	1040
	24	2 @ 12"	2710	2570	2330	2110	1870	1650	1440	1220	1080
1-1/4" Copper	24	3 @ 6"	3050	2900	2620	2380	2100	1860	1620	1370	1220
	12	1	1690	1610	1450	1320	1170	1030	900	760	680
	18	1	2070	1970	1780	1610	1430	1260	1100	930	830
42 Fins/ft.	24	1	2200	2090	1890	1720	1520	1340	1170	990	880
	18	2 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070
	24	2 @ 6"	2850	2710	2450	2220	1970	1740	1510	1280	1140
1-1/4" Copper	24	2 @ 12"	2950	2800	2540	2300	2040	1800	1560	1330	1180
	24	3 @ 6"	3330	3160	2860	2600	2300	2030	1760	1500	1330
50 Fins/ft.	12	1	1790	1700	1540	1400	1240	1090	950	810	720
	18	1	2190	2080	1880	1710	1510	1340	1160	990	880
	24	1	2330	2210	2000	1820	1610	1420	1230	1050	930
1-1/4" Copper	18	2 @ 6"	2830	2690	2430	2210	1950	1730	1500	1270	1130
	24	2 @ 6"	3010	2860	2590	2350	2080	1840	1600	1350	1200
	24	2 @ 12"	3120	2960	2680	2430	2150	1900	1650	1400	1250
1-1/4" Copper	24	3 @ 6"	3520	3340	3030	2750	2430	2150	1870	1580	1410

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL R PERFORMANCE

Table 27.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1270	1210	1090	990	880	770	670	570	510
	18	1	1550	1470	1330	1210	1070	950	820	700	620
	24	1	1660	1580	1430	1290	1150	1010	880	750	660
	18	2 @ 6"	1940	1840	1670	1510	1340	1180	1030	870	780
	24	2 @ 6"	2070	1970	1780	1610	1430	1260	1100	930	830
	24	2 @ 12"	2150	2040	1850	1680	1480	1310	1140	970	860
	24	3 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
	12	1	1450	1380	1250	1130	1000	880	770	650	580
	18	1	1770	1680	1520	1380	1220	1080	940	800	710
	24	1	1890	1800	1630	1470	1300	1150	1000	850	760
3/4" Copper 42 Fins/ft.	18	2 @ 6"	2210	2100	1900	1720	1520	1350	1170	990	880
	24	2 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	2 @ 12"	2440	2320	2100	1900	1680	1490	1290	1100	980
	24	3 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070
	12	1	1630	1550	1400	1270	1120	990	860	730	650
	18	1	1990	1890	1710	1550	1370	1210	1050	900	800
	24	1	2120	2010	1820	1650	1460	1290	1120	950	850
	18	2 @ 6"	2490	2370	2140	1940	1720	1520	1320	1120	1000
	24	2 @ 6"	2660	2530	2290	2070	1840	1620	1410	1200	1060
	24	2 @ 12"	2760	2620	2370	2150	1900	1680	1460	1240	1100
3/4" Copper 50 Fins/ft.	24	3 @ 6"	3000	2850	2580	2340	2070	1830	1590	1350	1200
	12	1	1250	1190	1080	980	860	760	660	560	500
	18	1	1520	1440	1310	1190	1050	930	810	680	610
	24	1	1630	1550	1400	1270	1120	990	860	730	650
	18	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	2040	1940	1750	1590	1410	1240	1080	920	820
	24	2 @ 12"	2110	2000	1810	1650	1460	1290	1120	950	840
	24	3 @ 6"	2300	2190	1980	1790	1590	1400	1220	1040	920
	12	1	1390	1320	1200	1080	960	850	740	630	560
	18	1	1700	1620	1460	1330	1170	1040	900	770	680
1" Copper 34 Fins/ft.	24	1	1820	1730	1570	1420	1260	1110	960	820	730
	18	2 @ 6"	2130	2020	1830	1660	1470	1300	1130	960	850
	24	2 @ 6"	2270	2160	1950	1770	1570	1380	1200	1020	910
	24	2 @ 12"	2350	2230	2020	1830	1620	1430	1250	1060	940
	24	3 @ 6"	2560	2430	2200	2000	1770	1560	1360	1150	1020
	12	1	1540	1460	1320	1200	1060	940	820	690	620
	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
	24	1	2010	1910	1730	1570	1390	1230	1070	900	800
	18	2 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	2 @ 6"	2510	2380	2160	1960	1730	1530	1330	1130	1000
1" Copper 42 Fins/ft.	24	2 @ 12"	2600	2470	2240	2030	1790	1590	1380	1170	1040
	24	3 @ 6"	2840	2700	2440	2220	1960	1730	1510	1280	1140
	12	1	1190	1130	1020	930	820	730	630	540	480
	18	1	1460	1390	1260	1140	1010	890	770	660	580
	24	1	1550	1470	1330	1210	1070	950	820	700	620
	18	2 @ 6"	1830	1740	1570	1430	1260	1120	970	820	730
	24	2 @ 6"	1950	1850	1680	1520	1350	1190	1030	880	780
	24	2 @ 12"	2020	1920	1740	1580	1390	1230	1070	910	810
	24	3 @ 6"	2210	2100	1900	1720	1520	1350	1170	990	880
	12	1	1320	1250	1140	1030	910	810	700	590	530
1-1/4" Copper 34 Fins/ft.	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1720	1630	1480	1340	1190	1050	910	770	690
	18	2 @ 6"	2020	1920	1740	1580	1390	1230	1070	910	810
	24	2 @ 6"	2160	2050	1860	1680	1490	1320	1140	970	860
	24	2 @ 12"	2230	2120	1920	1740	1540	1360	1180	1000	890
	24	3 @ 6"	2430	2310	2090	1900	1680	1480	1290	1090	970
	12	1	1550	1470	1330	1210	1070	950	820	700	620
	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1890	1800	1630	1470	1300	1150	1000	850	760
	18	2 @ 6"	2220	2110	1910	1730	1530	1350	1180	1000	890
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	2370	2250	2040	1850	1640	1450	1260	1070	950
	24	2 @ 12"	2460	2340	2120	1920	1700	1500	1300	1110	980
	24	3 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL TA ARCHITECTURAL TOP OUTLET FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, second and third row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- EWS ④ supports have integral enclosure lock.

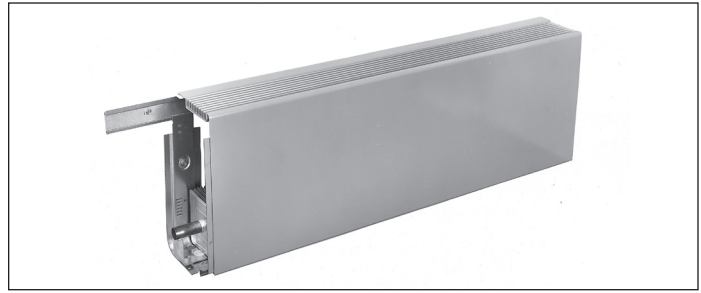
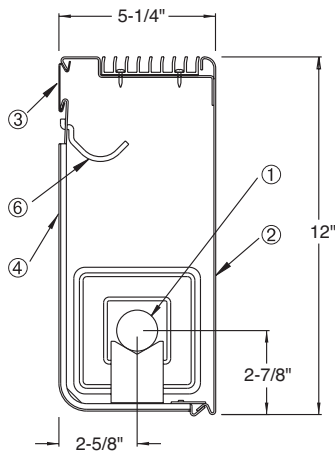
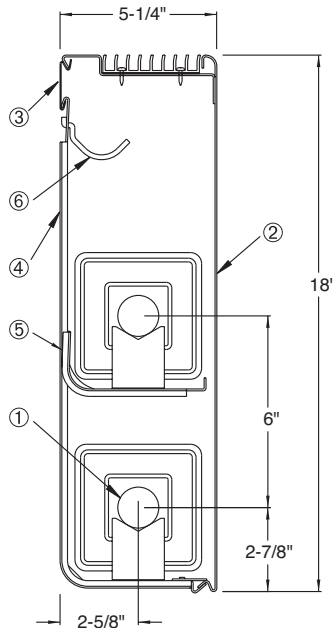


Figure 28.1 - System Components

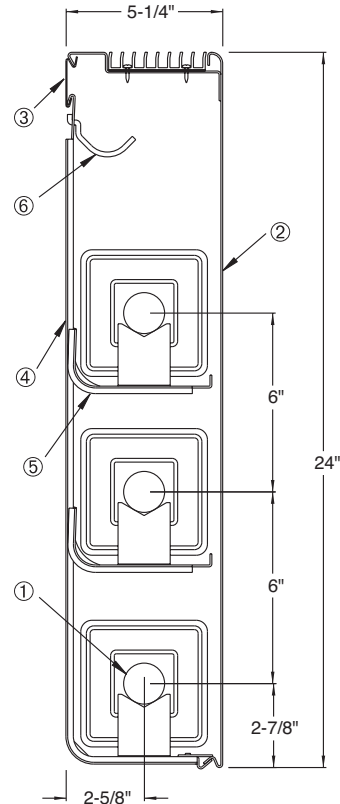
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger



TA 012



TA 018



TA 024

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 16 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 12, 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Aluminum bar grille at top outlet.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Bottom inlet grille conceals open air inlet for installations above eye level.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL TA PERFORMANCE

Table 29.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1390	1320	1200	1080	960	850	740	630	560
	18	1	1710	1620	1470	1330	1180	1040	910	770	680
	24	1	1880	1790	1620	1470	1300	1150	1000	850	750
	18	2 @ 6"	2200	2090	1890	1720	1520	1340	1170	990	880
	24	2 @ 6"	2420	2300	2080	1890	1670	1480	1280	1090	970
3/4" Copper 42 Fins/ft.	24	2 @ 12"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	24	3 @ 6"	2820	2680	2430	2200	1950	1720	1490	1270	1130
	12	1	1530	1450	1320	1190	1060	930	810	690	610
	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
	24	1	2060	1960	1770	1610	1420	1260	1090	930	820
3/4" Copper 50 Fins/ft.	18	2 @ 6"	2420	2300	2080	1890	1670	1480	1280	1090	970
	24	2 @ 6"	2660	2530	2290	2070	1840	1620	1410	1200	1060
	24	2 @ 12"	2760	2620	2370	2150	1900	1680	1460	1240	1100
	24	3 @ 6"	3130	2970	2690	2440	2160	1910	1660	1410	1250
	12	1	1600	1520	1380	1250	1100	980	850	720	610
1" Copper 34 Fins/ft.	18	1	2040	1940	1750	1590	1410	1240	1080	920	820
	24	1	2240	2130	1930	1750	1550	1370	1190	1010	900
	18	2 @ 6"	2640	2510	2270	2060	1820	1610	1400	1190	1060
	24	2 @ 6"	2900	2760	2490	2260	2000	1770	1540	1310	1160
	24	2 @ 12"	3010	2860	2590	2350	2080	1840	1600	1350	1200
1" Copper 42 Fins/ft.	24	3 @ 6"	3390	3220	2920	2640	2340	2070	1800	1530	1360
	12	1	1470	1400	1260	1150	1010	900	780	660	590
	18	1	1800	1710	1550	1400	1240	1100	950	810	720
	24	1	1980	1880	1700	1540	1370	1210	1050	890	790
	18	2 @ 6"	2320	2200	2000	1810	1600	1420	1230	1040	930
1" Copper 50 Fins/ft.	24	2 @ 6"	2550	2420	2190	1990	1760	1560	1350	1150	1020
	24	2 @ 12"	2640	2510	2270	2060	1820	1610	1400	1190	1060
	24	3 @ 6"	2960	2810	2550	2310	2040	1810	1570	1330	1180
	12	1	1600	1520	1380	1250	1100	980	850	720	640
	18	1	1970	1870	1690	1540	1360	1200	1040	890	790
1-1/4" Copper 34 Fins/ft.	24	1	2170	2060	1870	1690	1500	1320	1150	980	870
	18	2 @ 6"	2550	2420	2190	1990	1760	1560	1350	1150	1020
	24	2 @ 6"	2800	2660	2410	2180	1930	1710	1480	1260	1120
	24	2 @ 12"	2900	2760	2490	2260	2000	1770	1540	1310	1160
	24	3 @ 6"	3280	3120	2820	2560	2260	2000	1740	1480	1310
1-1/4" Copper 42 Fins/ft.	12	1	1720	1630	1480	1340	1190	1050	910	770	690
	18	1	2120	2010	1820	1650	1460	1290	1120	950	850
	24	1	2320	2200	2000	1810	1600	1420	1230	1040	930
	18	2 @ 6"	2730	2590	2350	2130	1880	1670	1450	1230	1090
	24	2 @ 6"	3000	2850	2580	2340	2070	1830	1590	1350	1200
1-1/4" Copper 50 Fins/ft.	24	2 @ 12"	3110	2950	2670	2430	2150	1900	1650	1400	1240
	24	3 @ 6"	3520	3340	3030	2750	2430	2150	1870	1580	1410
	12	1	1540	1460	1320	1200	1060	940	820	690	620
	18	1	1900	1810	1630	1480	1310	1160	1010	860	760
	24	1	2080	1980	1790	1620	1440	1270	1100	940	830
1-1/4" Copper 34 Fins/ft.	18	2 @ 6"	2450	2330	2110	1910	1690	1490	1300	1100	980
	24	2 @ 6"	2690	2560	2310	2100	1860	1640	1430	1210	1080
	24	2 @ 12"	2790	2650	2400	2180	1930	1700	1480	1260	1120
	24	3 @ 6"	3140	2980	2700	2450	2170	1920	1660	1410	1260
	12	1	1680	1600	1440	1310	1160	1020	890	760	670
1-1/4" Copper 42 Fins/ft.	18	1	2070	1970	1780	1610	1430	1260	1100	930	830
	24	1	2270	2160	1950	1770	1570	1380	1200	1020	910
	18	2 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070
	24	2 @ 6"	2940	2790	2530	2290	2030	1790	1560	1320	1180
	24	2 @ 12"	3040	2890	2610	2370	2100	1850	1610	1370	1220
1-1/4" Copper 50 Fins/ft.	24	3 @ 6"	3430	3260	2950	2680	2370	2090	1820	1540	1370
	12	1	1780	1690	1530	1390	1230	1090	940	800	710
	18	1	2190	2080	1880	1710	1510	1340	1160	990	880
	24	1	2400	2280	2060	1870	1660	1460	1270	1080	960
	18	2 @ 6"	2830	2690	2430	2210	1950	1730	1500	1270	1130
1-1/4" Copper 50 Fins/ft.	24	2 @ 6"	3100	2950	2670	2420	2140	1890	1640	1400	1240
	24	2 @ 12"	3220	3060	2770	2510	2220	1960	1710	1450	1290
	24	3 @ 6"	3630	3450	3120	2830	2500	2210	1920	1630	1450

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL TA PERFORMANCE

Table 30.1 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	12	1	1270	1210	1090	990	880	770	670	570	510
	18	1	1560	1480	1340	1220	1080	950	830	700	620
	24	1	1710	1620	1470	1330	1180	1040	910	770	680
	18	2 @ 6"	1940	1840	1670	1510	1340	1180	1030	870	780
	24	2 @ 6"	2130	2020	1830	1660	1470	1300	1130	960	850
	24	2 @ 12"	2210	2100	1900	1720	1520	1350	1170	990	880
	24	3 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	24	3 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
3/4" Copper 42 Fins/ft.	12	1	1440	1370	1240	1120	990	880	760	650	580
	18	1	1770	1680	1520	1380	1220	1080	940	800	710
	24	1	1950	1850	1680	1520	1350	1190	1030	880	780
	18	2 @ 6"	2210	2100	1900	1720	1520	1350	1170	990	880
	24	2 @ 6"	2430	2310	2090	1900	1680	1480	1290	1090	970
	24	2 @ 12"	2520	2390	2170	1970	1740	1540	1340	1130	1010
	24	3 @ 6"	2750	2610	2370	2150	1900	1680	1460	1240	1100
	24	3 @ 6"	2750	2610	2370	2150	1900	1680	1460	1240	1100
3/4" Copper 50 Fins/ft.	12	1	1620	1540	1390	1260	1120	990	860	730	650
	18	1	1990	1890	1710	1550	1370	1210	1050	900	800
	24	1	2190	2080	1880	1710	1510	1340	1160	990	880
	18	2 @ 6"	2490	2370	2140	1940	1720	1520	1320	1120	1000
	24	2 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
	24	2 @ 12"	2840	2700	2440	2220	1960	1730	1510	1280	1140
	24	3 @ 6"	3090	2940	2660	2410	2130	1880	1640	1390	1240
	24	3 @ 6"	3090	2940	2660	2410	2130	1880	1640	1390	1240
1" Copper 34 Fins/ft.	12	1	1240	1180	1070	970	860	760	660	560	500
	18	1	1530	1450	1320	1190	1060	930	810	690	610
	24	1	1680	1600	1440	1310	1160	1020	890	760	670
	18	2 @ 6"	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	2100	2000	1810	1640	1450	1280	1110	950	840
	24	2 @ 12"	2180	2070	1870	1700	1500	1330	1160	980	870
	24	3 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	3 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
1" Copper 42 Fins/ft.	12	1	1390	1320	1200	1080	960	850	740	630	560
	18	1	1710	1620	1470	1330	1180	1040	910	770	680
	24	1	1870	1780	1610	1460	1290	1140	990	840	750
	18	2 @ 6"	2130	2020	1830	1660	1470	1300	1130	960	850
	24	2 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
	24	2 @ 12"	2420	2300	2080	1890	1670	1480	1280	1090	970
	24	3 @ 6"	2640	2510	2270	2060	1820	1610	1400	1190	1060
	24	3 @ 6"	2640	2510	2270	2060	1820	1610	1400	1190	1060
1" Copper 50 Fins/ft.	12	1	1530	1450	1320	1190	1060	930	810	690	610
	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
	24	1	2070	1970	1780	1610	1430	1260	1100	930	830
	18	2 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	24	2 @ 6"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	24	2 @ 12"	2680	2550	2300	2090	1850	1630	1420	1210	1070
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
	24	3 @ 6"	2930	2780	2520	2290	2020	1790	1550	1320	1170
1-1/4" Copper 34 Fins/ft.	12	1	1190	1130	1020	930	820	730	630	540	480
	18	1	1460	1390	1260	1140	1010	890	770	660	580
	24	1	1600	1520	1380	1250	1100	980	850	720	640
	18	2 @ 6"	1830	1740	1570	1430	1260	1120	970	820	730
	24	2 @ 6"	2010	1910	1730	1570	1390	1230	1070	900	800
	24	2 @ 12"	2090	1990	1800	1630	1440	1270	1110	940	840
	24	3 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	24	3 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
1-1/4" Copper 42 Fins/ft.	12	1	1320	1250	1140	1030	910	810	700	590	530
	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1780	1690	1530	1390	1230	1090	940	800	710
	18	2 @ 6"	2020	1920	1740	1580	1390	1230	1070	910	810
	24	2 @ 6"	2220	2110	1910	1730	1530	1350	1180	1000	890
	24	2 @ 12"	2300	2190	1980	1790	1590	1400	1220	1040	920
	24	3 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	24	3 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
1-1/4" Copper 50 Fins/ft.	12	1	1440	1370	1240	1120	990	880	760	650	580
	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1950	1850	1680	1520	1350	1190	1030	880	780
	18	2 @ 6"	2220	2110	1910	1730	1530	1350	1180	1000	890
	24	2 @ 6"	2440	2320	2100	1900	1680	1490	1290	1100	980
	24	2 @ 12"	2530	2400	2180	1970	1750	1540	1340	1140	1010
	24	3 @ 6"	2750	2610	2370	2150	1900	1680	1460	1240	1100
	24	3 @ 6"	2750	2610	2370	2150	1900	1680	1460	1240	1100

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL SF SLOPE TOP, FLOOR MOUNTED FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, first and/or second row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- Single or double Floor Angle ⑦ anchors enclosure to floor.

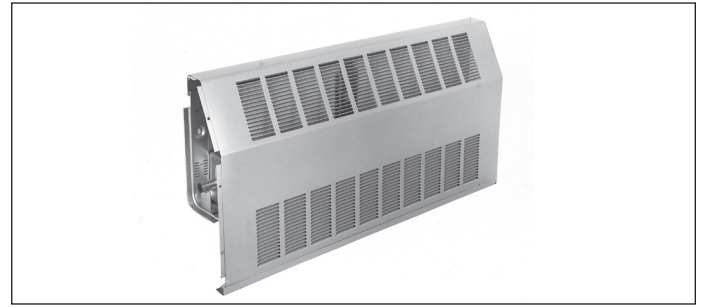
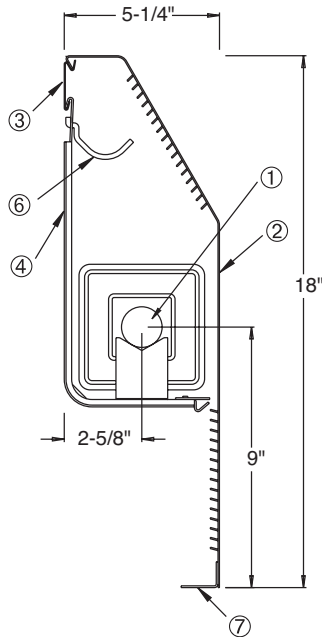
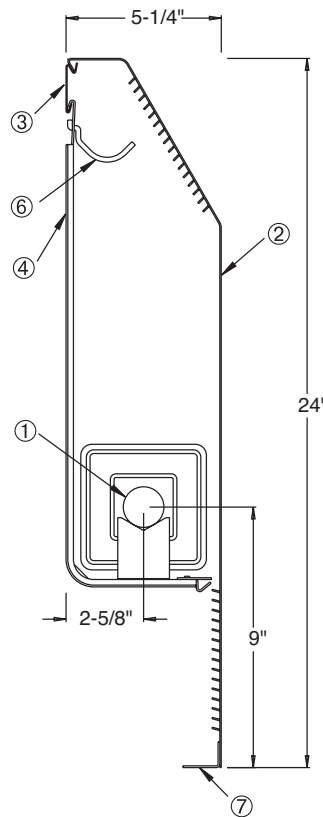


Figure 31.1 - System Components

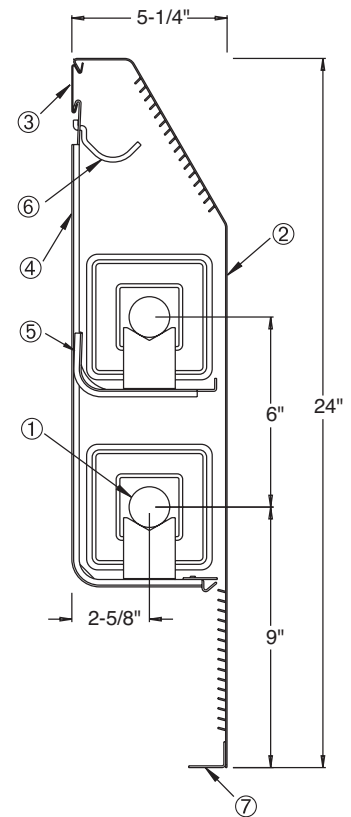
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger
- ⑦ Single or Double Floor Angle



SF 018



SF 024



SF 024

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Single floor angle using screws or double floor angle without screws to anchor enclosure to floor.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL SF PERFORMANCE

Table 32.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	18	1	1570	1490	1350	1220	1080	960	830	710	630
	24	1	1660	1580	1430	1290	1150	1010	880	750	660
	24	2 @ 6"	2130	2020	1830	1660	1470	1300	1130	960	850
3/4" Copper 42 Fins/ft.	18	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	2 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
3/4" Copper 50 Fins/ft.	18	1	1870	1780	1610	1460	1290	1140	990	840	750
	24	1	1980	1880	1700	1540	1370	1210	1050	890	790
	24	2 @ 6"	2560	2430	2200	2000	1770	1560	1360	1150	1020
1" Copper 34 Fins/ft.	18	1	1650	1570	1420	1290	1140	1010	870	740	660
	24	1	1750	1660	1510	1370	1210	1070	930	790	700
	24	2 @ 6"	2250	2140	1940	1760	1550	1370	1190	1010	900
1" Copper 42 Fins/ft.	18	1	1810	1720	1560	1410	1250	1100	960	810	720
	24	1	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	2460	2340	2120	1920	1700	1500	1300	1110	980
1" Copper 50 Fins/ft.	18	1	1940	1840	1670	1510	1340	1180	1030	870	780
	24	1	2050	1950	1760	1600	1410	1250	1090	920	820
	24	2 @ 6"	2650	2520	2280	2070	1830	1620	1400	1190	1060
1-1/4" Copper 34 Fins/ft.	18	1	1730	1640	1490	1350	1190	1060	920	780	690
	24	1	1830	1740	1570	1430	1260	1120	970	820	730
	24	2 @ 6"	2370	2250	2040	1850	1640	1450	1260	1070	950
1-1/4" Copper 42 Fins/ft.	18	1	1890	1800	1630	1470	1300	1150	1000	850	760
	24	1	2000	1900	1720	1560	1380	1220	1060	900	800
	24	2 @ 6"	2590	2460	2230	2020	1790	1580	1370	1170	1040
1-1/4" Copper 50 Fins/ft.	18	1	2000	1900	1720	1560	1380	1220	1060	900	800
	24	1	2120	2010	1820	1650	1460	1290	1120	950	850
	24	2 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100

Table 32.2 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	18	1	1420	1350	1220	1110	980	870	750	640	570
	24	1	1510	1430	1300	1180	1040	920	800	680	600
	24	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
3/4" Copper 42 Fins/ft.	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1710	1620	1470	1330	1180	1040	910	770	680
	24	2 @ 6"	2140	2030	1840	1670	1480	1310	1130	960	860
3/4" Copper 50 Fins/ft.	18	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	1	1930	1830	1660	1510	1330	1180	1020	870	770
	24	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
1" Copper 34 Fins/ft.	18	1	1400	1330	1200	1090	970	850	740	630	560
	24	1	1480	1410	1270	1150	1020	900	780	670	590
	24	2 @ 6"	1850	1760	1590	1440	1280	1130	980	830	740
1" Copper 42 Fins/ft.	18	1	1560	1480	1340	1220	1080	950	830	700	620
	24	1	1650	1570	1420	1290	1140	1010	870	740	660
	24	2 @ 6"	2060	1960	1770	1610	1420	1260	1090	930	820
1" Copper 50 Fins/ft.	18	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
1-1/4" Copper 34 Fins/ft.	18	1	1330	1260	1140	1040	920	810	700	600	530
	24	1	1410	1340	1210	1100	970	860	750	630	560
	24	2 @ 6"	1770	1680	1520	1380	1220	1080	940	800	710
1-1/4" Copper 42 Fins/ft.	18	1	1480	1410	1270	1150	1020	900	780	670	590
	24	1	1560	1480	1340	1220	1080	950	830	700	620
	24	2 @ 6"	1960	1860	1690	1530	1350	1200	1040	880	780
1-1/4" Copper 50 Fins/ft.	18	1	1630	1550	1400	1270	1120	990	860	730	650
	24	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	2 @ 6"	2150	2040	1850	1680	1480	1310	1140	970	860

• Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.

• Finned length is the specified element length - 6" (3" plain end each side).

MODEL RF FRONT/TOP OUTLET, FLOOR MOUNTED FEATURES

- Enclosure ② engages concealed Hanger Strip ③.
- Enclosure Wall Support (EWS) ④ hangs from Hanger Strip at any location and attaches to wall with one fastener.
- EWS ④ supports Heating Element ①, first and/or second row Element Support Assembly (ESA) ⑤ and Return Pipe Hanger ⑥ without fasteners.
- Single or double Floor Angle ⑦ anchors enclosure to floor.

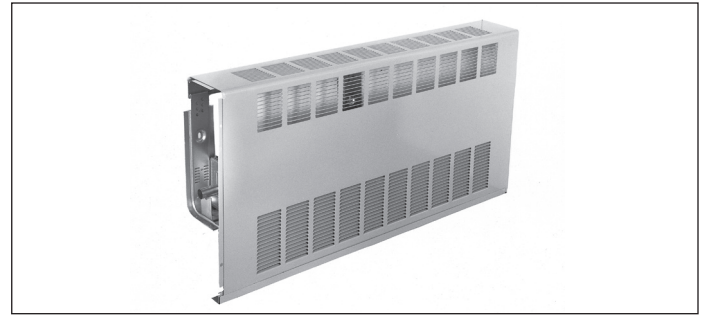
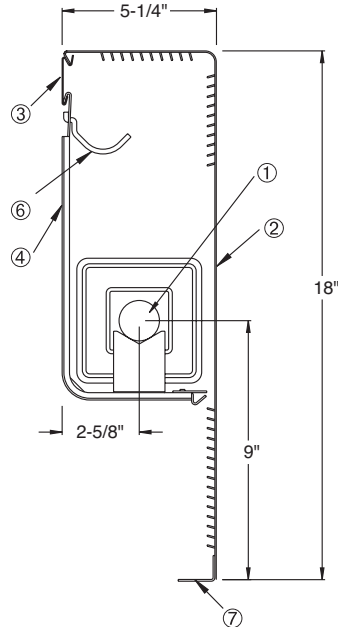
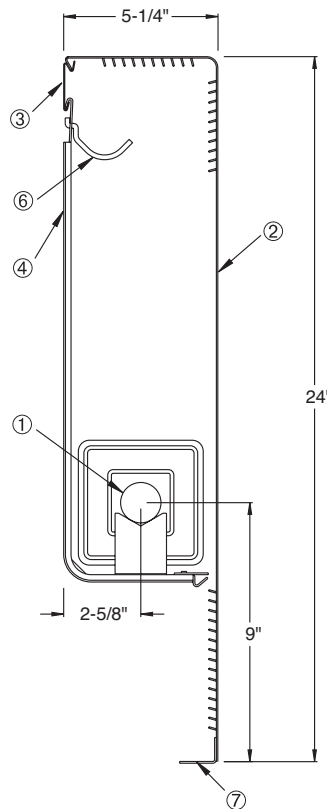


Figure 33.1 - System Components

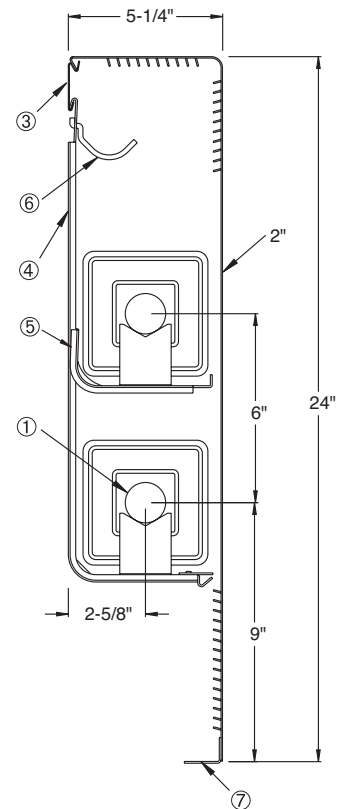
- ① Heating Element
- ② Enclosure
- ③ Hanger Strip
- ④ Enclosure Wall Support (EWS)
- ⑤ Element Support Assembly (ESA)
- ⑥ Return Pipe Hanger
- ⑦ Single or Double Floor Angle



RF 018



RF 024



RF 024

Standard Features

- Hanger strip - 20 gauge aluminized steel.
- Enclosure, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Heights of 18 and 24 inches.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps, end enclosures and valve compartments use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.
- Return pipe hanger. Note: return pipe hanger cannot be used with damper option.

Options

- Enclosures available in 14 or 16 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Single floor angle using screws or double floor angle without screws to anchor enclosure to floor.
- Hanger strip with full back panel.
- Knob operated or tamperproof (key) damper.
- Column enclosure conceals piping around columns.

MODEL RF PERFORMANCE

Table 34.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	18	1	1620	1540	1390	1260	1120	990	860	730	650
	24	1	1730	1640	1490	1350	1190	1060	920	780	690
	24	2 @ 6"	2220	2110	1910	1730	1530	1350	1180	1000	890
3/4" Copper 42 Fins/ft.	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1890	1800	1630	1470	1300	1150	1000	850	760
	24	2 @ 6"	2440	2320	2100	1900	1680	1490	1290	1100	980
3/4" Copper 50 Fins/ft.	18	1	1930	1830	1660	1510	1330	1180	1020	870	770
	24	1	2060	1960	1770	1610	1420	1260	1090	930	820
	24	2 @ 6"	2660	2530	2290	2070	1840	1620	1410	1200	1060
1" Copper 34 Fins/ft.	18	1	1700	1620	1460	1330	1170	1040	900	770	680
	24	1	1820	1730	1570	1420	1260	1110	960	820	730
	24	2 @ 6"	2340	2220	2010	1830	1610	1430	1240	1050	940
1" Copper 42 Fins/ft.	18	1	1860	1770	1600	1450	1280	1130	990	840	740
	24	1	1990	1890	1710	1550	1370	1210	1050	900	800
	24	2 @ 6"	2570	2440	2210	2000	1770	1570	1360	1160	1030
1" Copper 50 Fins/ft.	18	1	2000	1900	1720	1560	1380	1220	1060	900	800
	24	1	2130	2020	1830	1660	1470	1300	1130	960	850
	24	2 @ 6"	2760	2620	2370	2150	1900	1680	1460	1240	1100
1-1/4" Copper 34 Fins/ft.	18	1	1790	1700	1540	1400	1240	1090	950	810	720
	24	1	1910	1810	1640	1490	1320	1170	1010	860	760
	24	2 @ 6"	2470	2350	2120	1930	1700	1510	1310	1110	990
1-1/4" Copper 42 Fins/ft.	18	1	1960	1860	1690	1530	1350	1200	1040	880	780
	24	1	2090	1990	1800	1630	1440	1270	1110	940	840
	24	2 @ 6"	2700	2570	2320	2110	1860	1650	1430	1220	1080
1-1/4" Copper 50 Fins/ft.	18	1	2070	1970	1780	1610	1430	1260	1100	930	830
	24	1	2210	2100	1900	1720	1520	1350	1170	990	880
	24	2 @ 6"	2850	2710	2450	2220	1970	1740	1510	1280	1140

Table 34.2 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	18	1	1470	1400	1260	1150	1010	900	780	660	590
	24	1	1570	1490	1350	1220	1080	960	830	710	630
	24	2 @ 6"	1960	1860	1690	1530	1350	1200	1040	880	780
3/4" Copper 42 Fins/ft.	18	1	1630	1550	1400	1270	1120	990	860	730	650
	24	1	1790	1700	1540	1400	1240	1090	950	810	720
	24	2 @ 6"	2230	2120	1920	1740	1540	1360	1180	1000	890
3/4" Copper 50 Fins/ft.	18	1	1880	1790	1620	1470	1300	1150	1000	850	750
	24	1	2010	1910	1730	1570	1390	1230	1070	900	800
	24	2 @ 6"	2510	2380	2160	1960	1730	1530	1330	1130	1000
1" Copper 34 Fins/ft.	18	1	1440	1370	1240	1120	990	880	760	650	580
	24	1	1540	1460	1320	1200	1060	940	820	690	620
	24	2 @ 6"	1930	1830	1660	1510	1330	1180	1020	870	770
1" Copper 42 Fins/ft.	18	1	1610	1530	1380	1260	1110	980	850	720	640
	24	1	1720	1630	1480	1340	1190	1050	910	770	690
	24	2 @ 6"	2150	2040	1850	1680	1480	1310	1140	970	860
1" Copper 50 Fins/ft.	18	1	1780	1690	1530	1390	1230	1090	940	800	710
	24	1	1900	1810	1630	1480	1310	1160	1010	860	760
	24	2 @ 6"	2380	2260	2050	1860	1640	1450	1260	1070	950
1-1/4" Copper 34 Fins/ft.	18	1	1380	1310	1190	1080	950	840	730	620	550
	24	1	1470	1400	1260	1150	1010	900	780	660	590
	24	2 @ 6"	1850	1760	1590	1440	1280	1130	980	830	740
1-1/4" Copper 42 Fins/ft.	18	1	1530	1450	1320	1190	1060	930	810	690	610
	24	1	1630	1550	1400	1270	1120	990	860	730	650
	24	2 @ 6"	2040	1940	1750	1590	1410	1240	1080	920	820
1-1/4" Copper 50 Fins/ft.	18	1	1680	1600	1440	1310	1160	1020	890	760	670
	24	1	1790	1700	1540	1400	1240	1090	950	810	720
	24	2 @ 6"	2240	2130	1930	1750	1550	1370	1190	1010	900

• Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.

• Finned length is the specified element length - 6" (3" plain end each side).

MODEL P PEDESTAL STYLE FEATURES

- Enclosure ② attaches to height adjustable floor mounted pedestal Assembly ③.
- Heating Element ① supported by cradle on each Pedestal ③, two rows wide has 2 cradles.
- Pedestal ③ base anchored to the floor with one fastener.

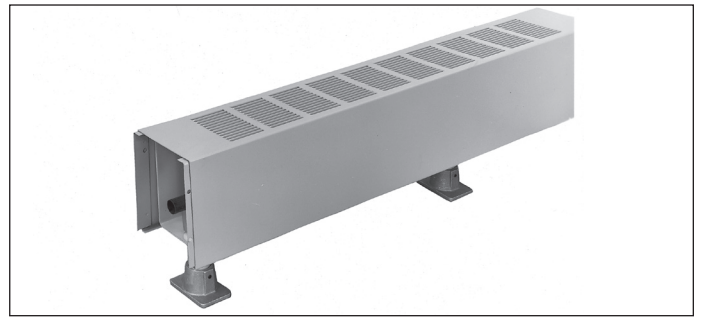
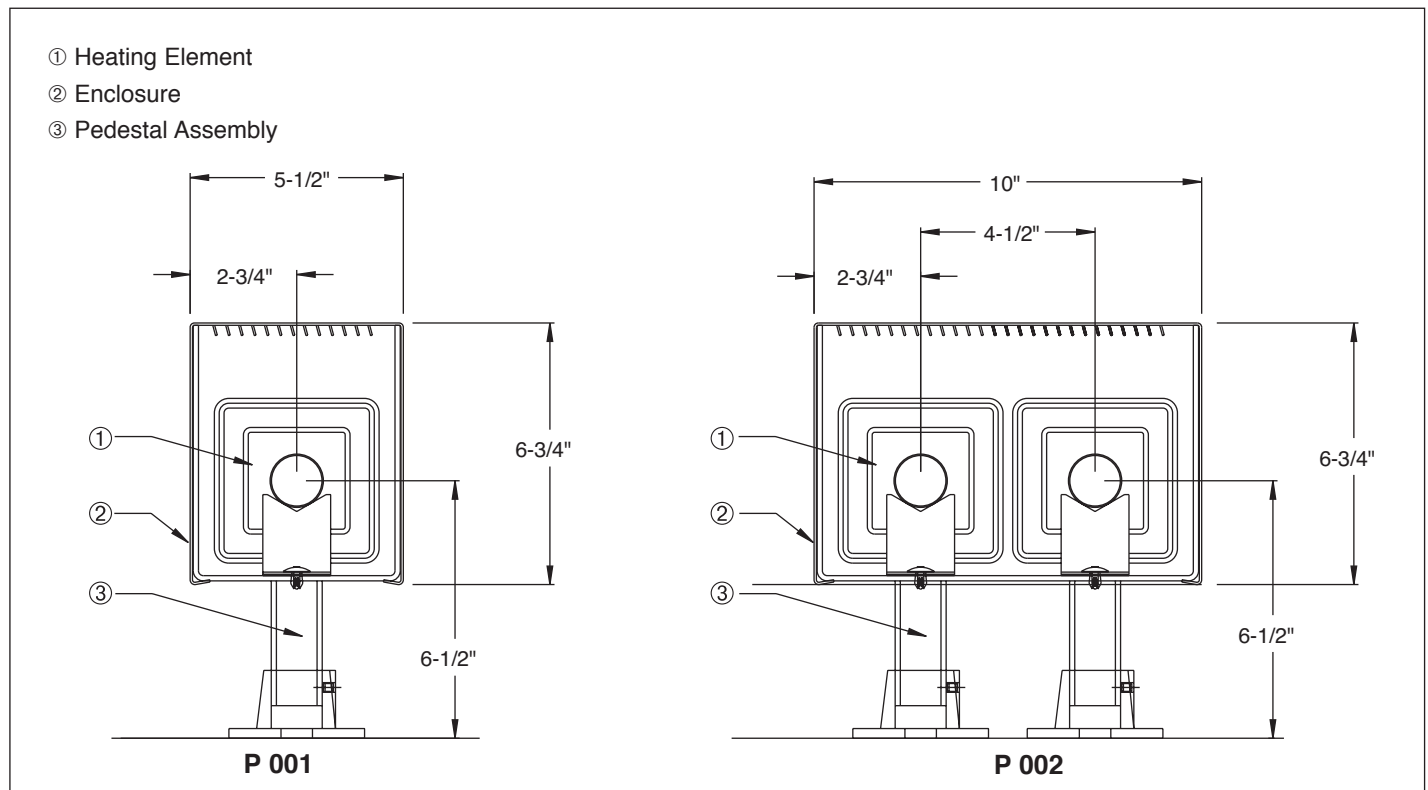


Figure 35.1 - System Components



Standard Features

- Enclosure, 16 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Enclosure and Heating Element in one or two rows wide.
- Enclosure sections are joined using concealed slip joints.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps and end enclosures use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.

Options

- Enclosures available in 14 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Column enclosure conceals piping around columns.

MODEL P PERFORMANCE

Table 36.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Type	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper	P 001	1	1170	1110	1010	910	810	710	620	530	470
34 Fins/ft.	P 002	2	2330	2210	2000	1820	1610	1420	1230	1050	930
3/4" Copper	P 001	1	1280	1220	1100	1000	880	780	680	580	510
42 Fins/ft.	P 002	2	2560	2430	2200	2000	1770	1560	1360	1150	1020
3/4" Copper	P 001	1	1390	1320	1200	1080	960	850	740	630	560
50 Fins/ft.	P 002	2	2780	2640	2390	2170	1920	1700	1470	1250	1110
1" Copper	P 001	1	1210	1150	1040	940	830	740	640	540	480
34 Fins/ft.	P 002	2	2420	2300	2080	1890	1670	1480	1280	1090	970
1" Copper	P 001	1	1320	1250	1140	1030	910	810	700	590	530
42 Fins/ft.	P 002	2	2650	2520	2280	2070	1830	1620	1400	1190	1060
1" Copper	P 001	1	1420	1350	1220	1110	980	870	750	640	570
50 Fins/ft.	P 002	2	2840	2700	2440	2220	1960	1730	1510	1280	1140
1-1/4" Copper	P 001	1	1260	1200	1080	980	870	770	670	570	500
34 Fins/ft.	P 002	2	2510	2380	2160	1960	1730	1530	1330	1130	1000
1-1/4" Copper	P 001	1	1370	1300	1180	1070	950	840	730	620	550
42 Fins/ft.	P 002	2	2740	2600	2360	2140	1890	1670	1450	1230	1100
1-1/4" Copper	P 001	1	1450	1380	1250	1130	1000	880	770	650	580
50 Fins/ft.	P 002	2	2900	2760	2490	2260	2000	1770	1540	1310	1160

Table 36.2 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Type	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper	P 001	1	970	920	830	760	670	590	510	440	390
34 Fins/ft.	P 002	2	1930	1830	1660	1510	1330	1180	1020	870	770
3/4" Copper	P 001	1	1090	1040	940	850	750	660	580	490	440
42 Fins/ft.	P 002	2	2170	2060	1870	1690	1500	1320	1150	980	870
3/4" Copper	P 001	1	1210	1150	1040	940	830	740	640	540	480
50 Fins/ft.	P 002	2	2410	2290	2070	1880	1660	1470	1280	1080	960
1" Copper	P 001	1	960	910	830	750	660	590	510	430	380
34 Fins/ft.	P 002	2	1930	1830	1660	1510	1330	1180	1020	870	770
1" Copper	P 001	1	1080	1030	930	840	750	660	570	490	430
42 Fins/ft.	P 002	2	2150	2040	1850	1680	1480	1310	1140	970	860
1" Copper	P 001	1	1190	1130	1020	930	820	730	630	540	480
50 Fins/ft.	P 002	2	2380	2260	2050	1860	1640	1450	1260	1070	950
1-1/4" Copper	P 001	1	960	910	830	750	660	590	510	430	380
34 Fins/ft.	P 002	2	1920	1820	1650	1500	1320	1170	1020	860	770
1-1/4" Copper	P 001	1	1070	1020	920	830	740	650	570	480	430
42 Fins/ft.	P 002	2	2130	2020	1830	1660	1470	1300	1130	960	850
1-1/4" Copper	P 001	1	1170	1110	1010	910	810	710	620	530	470
50 Fins/ft.	P 002	2	2340	2220	2010	1830	1610	1430	1240	1050	940

- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are  ◀

MODEL PA ARCHITECTURAL PEDESTAL STYLE FEATURES

- Enclosure ② attaches to height adjustable floor mounted pedestal Assembly ③.
- Heating Element ① supported by cradle on each Pedestal ③, two rows wide has 2 cradles.
- Pedestal ③ base anchored to the floor with one fastener.

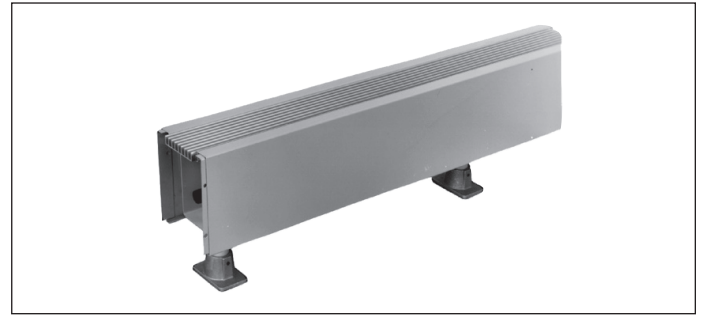
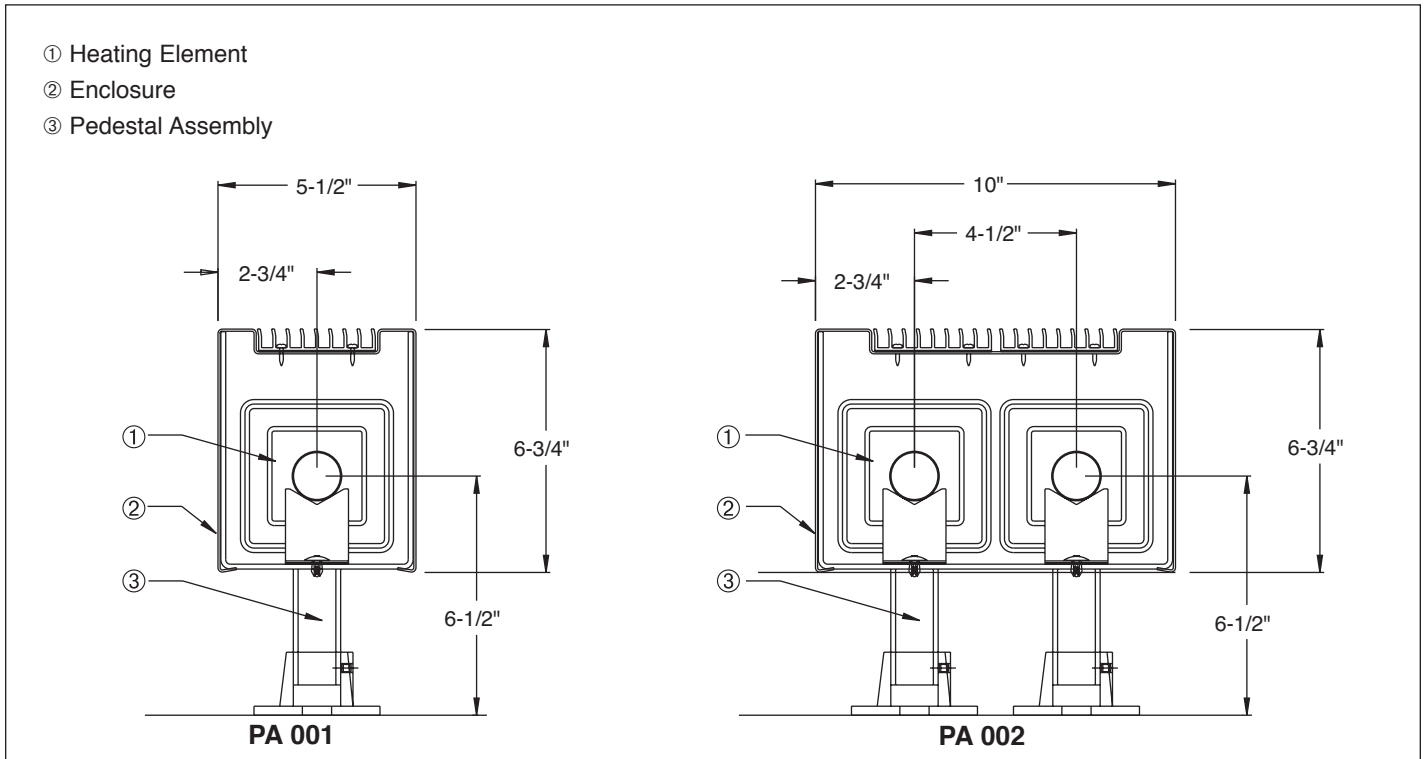


Figure 37.1 - System Components



Standard Features

- Enclosure, 16 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Enclosure and Heating Element in one or two rows wide.
- Enclosure sections are joined using concealed slip joints.
- Aluminum bar grille at top outlet.
- Baked on polyester powdercoat paint finish, tan color.

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps and end enclosures use slip joints to attach to enclosure.
- Inside, outside corners and enclosure extensions overlap enclosure sections.

Options

- Enclosures available in 14 gauge steel.
- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).
- Column enclosure conceals piping around columns.

MODEL PA PERFORMANCE

Table 38.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Type	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper	PA 001	1	1090	1040	940	850	750	660	580	490	440
34 Fins/ft.	PA 002	2	2190	2080	1880	1710	1510	1340	1160	990	880
3/4" Copper	PA 001	1	1200	1140	1030	940	830	730	640	540	480
42 Fins/ft.	PA 002	2	2400	2280	2060	1870	1660	1460	1270	1080	960
3/4" Copper	PA 001	1	1310	1240	1130	1020	900	800	690	590	520
50 Fins/ft.	PA 002	2	2610	2480	2240	2040	1800	1590	1380	1170	1040
1" Copper	PA 001	1	1140	1080	980	890	790	700	600	510	460
34 Fins/ft.	PA 002	2	2270	2160	1950	1770	1570	1380	1200	1020	910
1" Copper	PA 001	1	1240	1180	1070	970	860	760	660	560	500
42 Fins/ft.	PA 002	2	2490	2370	2140	1940	1720	1520	1320	1120	1000
1" Copper	PA 001	1	1330	1260	1140	1040	920	810	700	600	530
50 Fins/ft.	PA 002	2	2670	2540	2300	2080	1840	1630	1420	1200	1070
1-1/4" Copper	PA 001	1	1180	1120	1010	920	810	720	630	530	470
34 Fins/ft.	PA 002	2	2360	2240	2030	1840	1630	1440	1250	1060	940
1-1/4" Copper	PA 001	1	1290	1230	1110	1010	890	790	680	580	520
42 Fins/ft.	PA 002	2	2570	2440	2210	2000	1770	1570	1360	1160	1030
1-1/4" Copper	PA 001	1	1360	1290	1170	1060	940	830	720	610	540
50 Fins/ft.	PA 002	2	2720	2580	2340	2120	1880	1660	1440	1220	1090

Table 38.2 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Type	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper	PA 001	1	910	860	780	710	630	560	480	410	360
34 Fins/ft.	PA 002	2	1810	1720	1560	1410	1250	1100	960	810	720
3/4" Copper	PA 001	1	1020	970	880	800	700	620	540	460	410
42 Fins/ft.	PA 002	2	2040	1940	1750	1590	1410	1240	1080	920	820
3/4" Copper	PA 001	1	1130	1070	970	880	780	690	600	510	450
50 Fins/ft.	PA 002	2	2270	2160	1950	1770	1570	1380	1200	1020	910
1" Copper	PA 001	1	900	860	770	700	620	550	480	410	360
34 Fins/ft.	PA 002	2	1810	1720	1560	1410	1250	1100	960	810	720
1" Copper	PA 001	1	1010	960	870	790	700	620	540	450	400
42 Fins/ft.	PA 002	2	2020	1920	1740	1580	1390	1230	1070	910	810
1" Copper	PA 001	1	1120	1060	960	870	770	680	590	500	450
50 Fins/ft.	PA 002	2	2230	2120	1920	1740	1540	1360	1180	1000	890
1-1/4" Copper	PA 001	1	900	860	770	700	620	550	480	410	360
34 Fins/ft.	PA 002	2	1800	1710	1550	1400	1240	1100	950	810	720
1-1/4" Copper	PA 001	1	1000	950	860	780	690	610	530	450	400
42 Fins/ft.	PA 002	2	2000	1900	1720	1560	1380	1220	1060	900	800
1-1/4" Copper	PA 001	1	1100	1050	950	860	760	670	580	500	440
50 Fins/ft.	PA 002	2	2200	2090	1890	1720	1520	1340	1170	990	880

• Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.

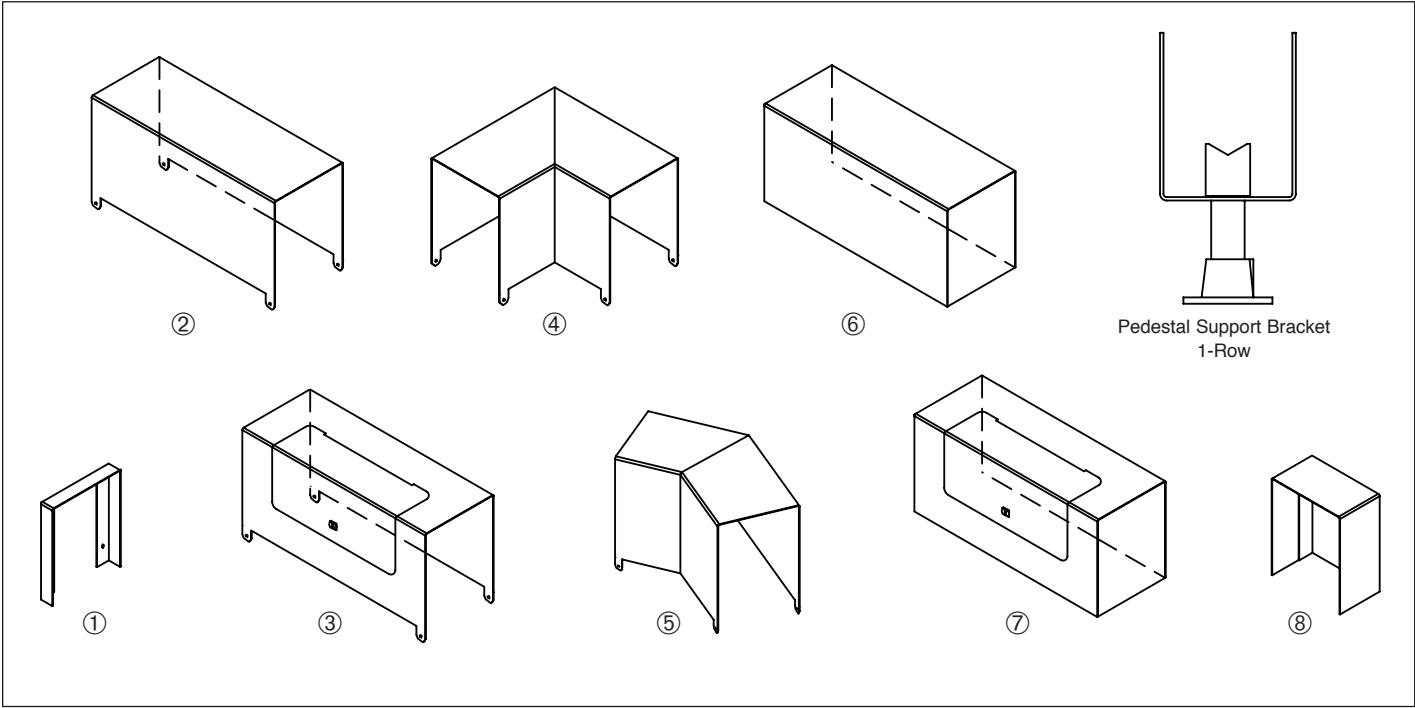
• Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL P AND PA ACCESSORIES

Figure 39.1 - Model P and PA Enclosure Accessories



Ref. No.	Accessory Description ^{① ②}	Fit Type ^③
1	Wall Support	(R or L)
2	5" or 12" Wide Enclosure Extension	(O)
3	12" Wide Enclosure Extension with Access Door	(O)
4	90° Inside/Outside Corner	(O)
5	135° Inside/Outside Corner	(O)
6	12" Wide End Enclosure	(S) (R or L)
7	12" Wide End Enclosure with Access Door	(S) (R or L)
8	End Cap	(S) (R or L)

- ^① At least two pedestals are required for each enclosure section. Allow a pedestal every 3'.
^② Accessories constructed of 20 gauge CRS
^③ (O)=Overlapping, (S)=Slip, (R or L)=Right or Left Hand Configurations

MODEL FT FLAT TOP ELEMENT COVER FEATURES

- Cover ② attaches directly to Heating Element ① fins.
- Heating Element ① and Cover ② can be installed in one, two or three rows.
- Heating Elements are supported by Fixed Brackets (FB) ④ or Expansion Brackets (EB) ③.
- Cover has overlapping joints.
- Enclosure Strap ⑤ provides a means to secure Cover to Heating Elements in multiple row installations.

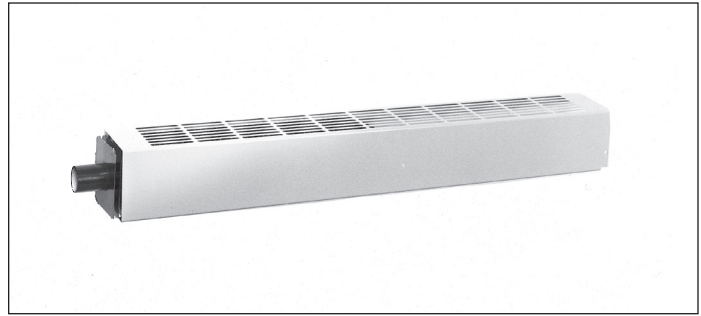
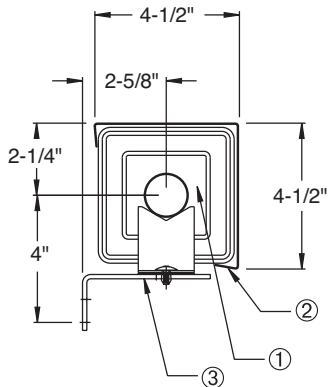
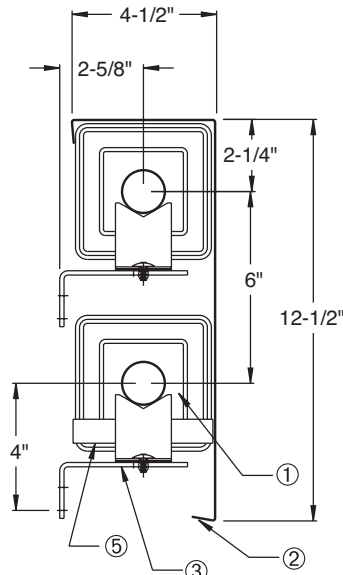


Figure 40.1 - System Components

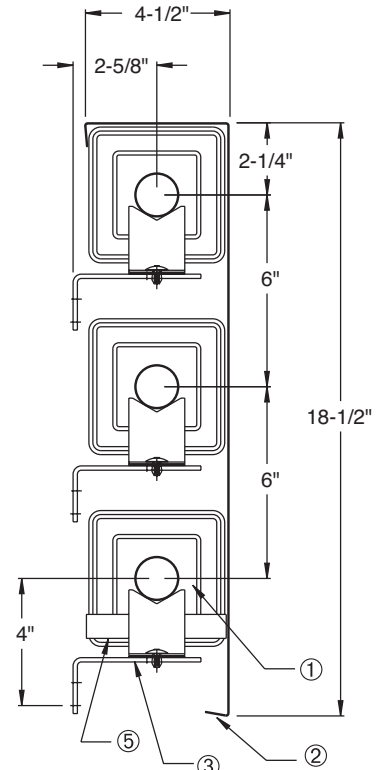
- ① Heating Element
- ② Cover
- ③ Expansion Bracket
- ④ Fixed Bracket
- ⑤ Enclosure Strap



FT 004



FT 012



FT 018

Standard Features

- Cover, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Cover heights of 4.5, 12.5 and 18.5 inches.
- Cover sections are joined using overlapping joints secured with screws.
- Baked on polyester powdercoat paint finish, tan color.

Options

- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps and end enclosures overlap cover and attach with screws.
- Inside, outside corners and enclosure extensions overlap cover sections and attach with screws.

MODEL FT PERFORMANCE

Table 41.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	4.5	1	1210	1150	1040	940	830	740	640	540	480
	12.5	2 @ 6"	2110	2000	1810	1650	1460	1290	1120	950	840
	18.5	3 @ 6"	2860	2720	2460	2230	1970	1740	1520	1290	1140
3/4" Copper 42 Fins/ft.	4.5	1	1330	1260	1140	1040	920	810	700	600	530
	12.5	2 @ 6"	2320	2200	2000	1810	1600	1420	1230	1040	930
	18.5	3 @ 6"	3170	3010	2730	2470	2190	1930	1680	1430	1270
3/4" Copper 50 Fins/ft.	4.5	1	1450	1380	1250	1130	1000	880	770	650	580
	12.5	2 @ 6"	2530	2400	2180	1970	1750	1540	1340	1140	1010
	18.5	3 @ 6"	3440	3270	2960	2680	2370	2100	1820	1550	1380
1" Copper 34 Fins/ft.	4.5	1	1260	1200	1080	980	870	770	670	570	500
	12.5	2 @ 6"	2200	2090	1890	1720	1520	1340	1170	990	880
	18.5	3 @ 6"	2970	2820	2550	2320	2050	1810	1570	1340	1190
1" Copper 42 Fins/ft.	4.5	1	1380	1310	1190	1080	950	840	730	620	550
	12.5	2 @ 6"	2410	2290	2070	1880	1660	1470	1280	1080	960
	18.5	3 @ 6"	3280	3120	2820	2560	2260	2000	1740	1480	1310
1" Copper 50 Fins/ft.	4.5	1	1480	1410	1270	1150	1020	900	780	670	590
	12.5	2 @ 6"	2590	2460	2230	2020	1790	1580	1370	1170	1040
	18.5	3 @ 6"	3520	3340	3030	2750	2430	2150	1870	1580	1410
1-1/4" Copper 34 Fins/ft.	4.5	1	1310	1240	1130	1020	900	800	690	590	520
	12.5	2 @ 6"	2290	2180	1970	1790	1580	1400	1210	1030	920
	18.5	3 @ 6"	3110	2950	2670	2430	2150	1900	1650	1400	1240
1-1/4" Copper 42 Fins/ft.	4.5	1	1420	1350	1220	1110	980	870	750	640	570
	12.5	2 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	18.5	3 @ 6"	3390	3220	2920	2640	2340	2070	1800	1530	1360
1-1/4" Copper 50 Fins/ft.	4.5	1	1510	1430	1300	1180	1040	920	800	680	600
	12.5	2 @ 6"	2640	2510	2270	2060	1820	1610	1400	1190	1060
	18.5	3 @ 6"	3580	3400	3080	2790	2470	2180	1900	1610	1430

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL EM EXPANDED METAL ELEMENT COVER FEATURES

- Cover ② attaches directly to Heating Element ① fins.
- Heating Element ① and Cover ② can be installed in one, two or three rows.
- Heating Elements are supported by Fixed Brackets (FB) ④ or Expansion Brackets (EB) ③.
- Cover has butting joints.
- Enclosure Strap ⑤ provides a means to secure Cover to Heating Elements in multiple row installations.

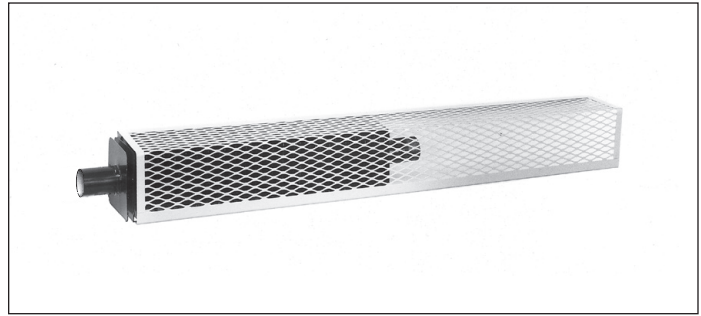
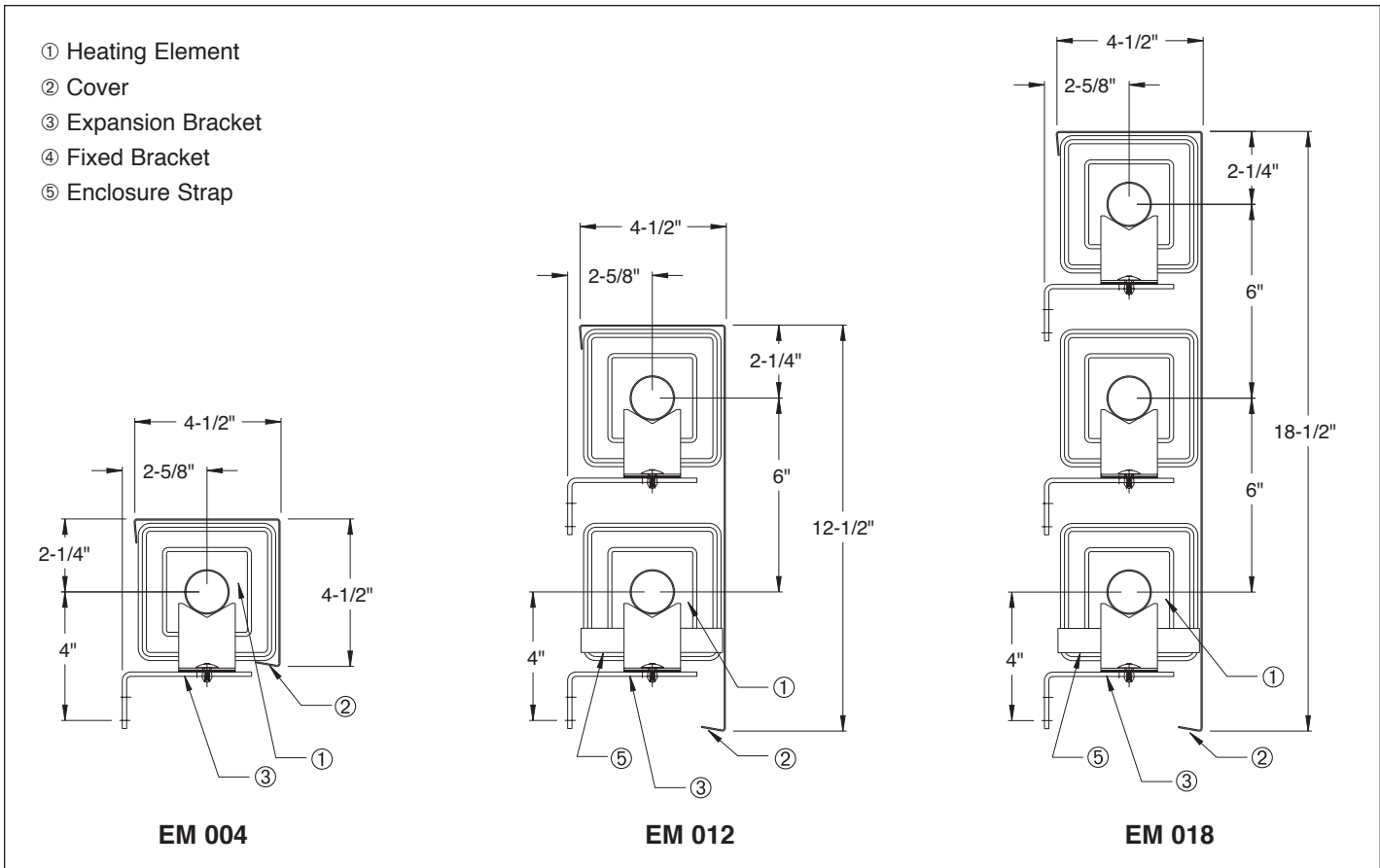


Figure 42.1 - System Components



Standard Features

- Cover, 18 gauge in lengths of 2 feet through 8 feet in 6 inch increments.
- Cover heights of 4.5, 12.5 and 18.5 inches.
- Cover sections are joined using butt joints.
- Baked on polyester powdercoat paint finish, tan color.

Options

- Baked on polyester powdercoat paint finish available in colors selected from color guide (75-403).

Accessories

- Accessories, 20 gauge, include all items for a complete installation.
- End caps and end enclosures overlap cover and attach with screws.
- Inside, outside corners and enclosure extensions overlap cover sections and attach with screws.

MODEL EM PERFORMANCE

Table 43.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Enclosure Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	4.5	1	1310	1240	1130	1020	900	800	690	590	520
	12.5	2 @ 6"	2280	2170	1960	1780	1570	1390	1210	1030	910
	18.5	3 @ 6"	3080	2930	2650	2400	2130	1880	1630	1390	1230
3/4" Copper 42 Fins/ft.	4.5	1	1430	1360	1230	1120	990	870	760	640	570
	12.5	2 @ 6"	2500	2380	2150	1950	1730	1530	1330	1130	1000
	18.5	3 @ 6"	3420	3250	2940	2670	2360	2090	1810	1540	1370
3/4" Copper 50 Fins/ft.	4.5	1	1560	1480	1340	1220	1080	950	830	700	620
	12.5	2 @ 6"	2730	2590	2350	2130	1880	1670	1450	1230	1090
	18.5	3 @ 6"	3710	3520	3190	2890	2560	2260	1970	1670	1480
1" Copper 34 Fins/ft.	4.5	1	1360	1290	1170	1060	940	830	720	610	540
	12.5	2 @ 6"	2370	2250	2040	1850	1640	1450	1260	1070	950
	18.5	3 @ 6"	3200	3040	2750	2500	2210	1950	1700	1440	1280
1" Copper 42 Fins/ft.	4.5	1	1480	1410	1270	1150	1020	900	780	670	590
	12.5	2 @ 6"	2600	2470	2240	2030	1790	1590	1380	1170	1040
	18.5	3 @ 6"	3520	3340	3030	2750	2430	2150	1870	1580	1410
1" Copper 50 Fins/ft.	4.5	1	1590	1510	1370	1240	1100	970	840	720	640
	12.5	2 @ 6"	2790	2650	2400	2180	1930	1700	1480	1260	1120
	18.5	3 @ 6"	3800	3610	3270	2960	2620	2320	2010	1710	1520
1-1/4" Copper 34 Fins/ft.	4.5	1	1410	1340	1210	1100	970	860	750	630	560
	12.5	2 @ 6"	2470	2350	2120	1930	1700	1510	1310	1110	990
	18.5	3 @ 6"	3350	3180	2880	2610	2310	2040	1780	1510	1340
1-1/4" Copper 42 Fins/ft.	4.5	1	1530	1450	1320	1190	1060	930	810	690	610
	12.5	2 @ 6"	2690	2560	2310	2100	1860	1640	1430	1210	1080
	18.5	3 @ 6"	3650	3470	3140	2850	2520	2230	1930	1640	1460
1-1/4" Copper 50 Fins/ft.	4.5	1	1620	1540	1390	1260	1120	990	860	730	650
	12.5	2 @ 6"	2850	2710	2450	2220	1970	1740	1510	1280	1140
	18.5	3 @ 6"	3860	3670	3320	3010	2660	2350	2050	1740	1540

- Bottom of enclosure mounted 4 inches above floor. Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

MODEL CP BARE HEATING ELEMENT FEATURES

- Copper Tube/Aluminum Fin.
- Heating Element ① can be installed in one, two or three rows.
- Heating Elements are supported by Fixed Brackets (FB) ③ or Expansion Brackets (EB) ②.

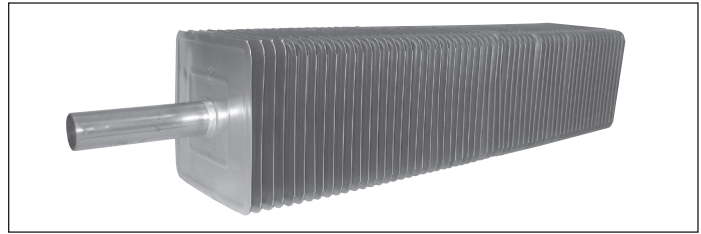
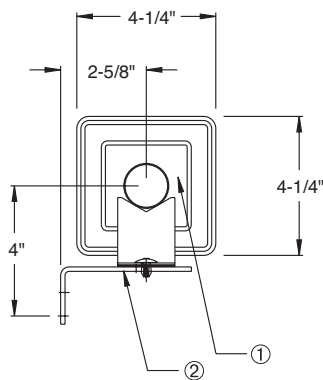
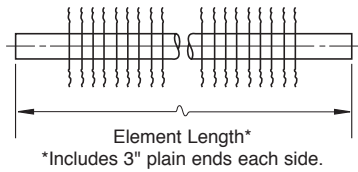
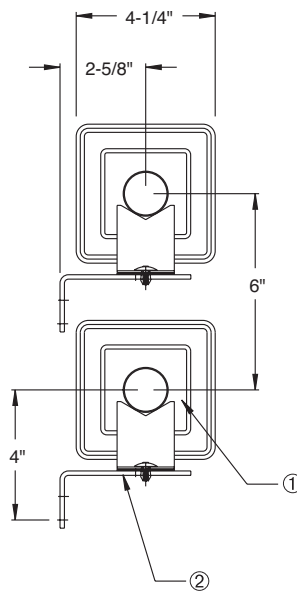


Figure 44.1 - System Components

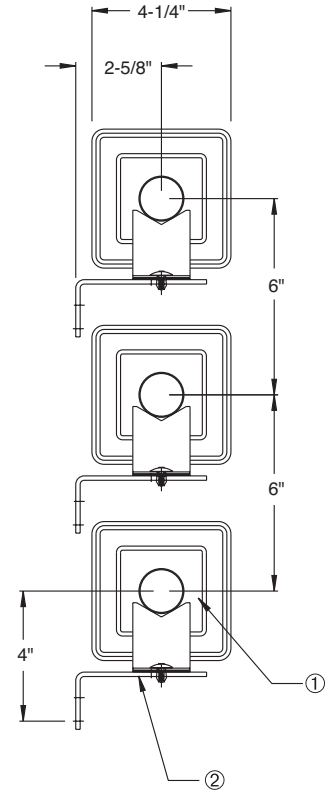
- ① Heating Element
- ② Expansion Bracket
- ③ Fixed Bracket



1-ROW



2-ROW



3-ROW

Copper Tube/Aluminum Fin

- Lengths of 2 feet through 12 feet in 6 inch increments for 1-1/4" diameter. Lengths are 2 feet through 8 feet in 6 inch increments for 3/4" and 1" diameter.
- Aluminum fins are 4-1/4" x 4-1/4" x 0.018" thick or 2-3/4" x 4-1/4" x 0.018" thick.
- Fins/foot are 34, 42 or 50.

MODEL CP PERFORMANCE

Table 45.1 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 4-1/4"

FIN SIZE - 4-1/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Mounting Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	9-1/4	1	1350	1280	1160	1050	930	820	720	610	540
	15-1/4	2 @ 6"	2350	2230	2020	1830	1620	1430	1250	1060	940
	21-1/4	3 @ 6"	3040	2890	2610	2370	2100	1850	1610	1370	1220
3/4" Copper 42 Fins/ft.	9-1/4	1	1480	1410	1270	1150	1020	900	780	670	590
	15-1/4	2 @ 6"	2840	2700	2440	2220	1960	1730	1510	1280	1140
	21-1/4	3 @ 6"	3720	3530	3200	2900	2570	2270	1970	1670	1490
3/4" Copper 50 Fins/ft.	9-1/4	1	1610	1530	1380	1260	1110	980	850	720	640
	15-1/4	2 @ 6"	2820	2680	2430	2200	1950	1720	1490	1270	1130
	21-1/4	3 @ 6"	3660	3480	3150	2850	2530	2230	1940	1650	1460
1" Copper 34 Fins/ft.	9-1/4	1	1400	1330	1200	1090	970	850	740	630	560
	15-1/4	2 @ 6"	2440	2320	2100	1900	1680	1490	1290	1100	980
	21-1/4	3 @ 6"	3150	2990	2710	2460	2170	1920	1670	1420	1260
1" Copper 42 Fins/ft.	9-1/4	1	1530	1450	1320	1190	1060	930	810	690	610
	15-1/4	2 @ 6"	2770	2630	2380	2160	1910	1690	1470	1250	1110
	21-1/4	3 @ 6"	3630	3450	3120	2830	2500	2210	1920	1630	1450
1" Copper 50 Fins/ft.	9-1/4	1	1640	1560	1410	1280	1130	1000	870	740	660
	15-1/4	2 @ 6"	2880	2740	2480	2250	1990	1760	1530	1300	1150
	21-1/4	3 @ 6"	3740	3550	3220	2920	2580	2280	1980	1680	1500
1-1/4" Copper 34 Fins/ft.	9-1/4	1	1450	1380	1250	1130	1000	880	770	650	580
	15-1/4	2 @ 6"	2540	2410	2180	1980	1750	1550	1350	1140	1020
	21-1/4	3 @ 6"	3330	3160	2860	2600	2300	2030	1760	1500	1330
1-1/4" Copper 42 Fins/ft.	9-1/4	1	1580	1500	1360	1230	1090	960	840	710	630
	15-1/4	2 @ 6"	2690	2560	2310	2100	1860	1640	1430	1210	1080
	21-1/4	3 @ 6"	3520	3340	3030	2750	2430	2150	1870	1580	1410
1-1/4" Copper 50 Fins/ft.	9-1/4	1	1670	1590	1440	1300	1150	1020	890	750	670
	15-1/4	2 @ 6"	2670	2540	2300	2080	1840	1630	1420	1200	1070
	21-1/4	3 @ 6"	3480	3310	2990	2710	2400	2120	1840	1570	1390

Table 45.2 - Steam and Hot Water Ratings - Fin Size - 2-3/4" x 4-1/4"

FIN SIZE - 2-3/4" X 4-1/4" ALUMINUM											
Heating Element Fin Spacing	Mounting Height (Inches)	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
				210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	6-3/4	1	1110	1050	950	870	770	680	590	500	440
	12-3/4	2 @ 6"	1890	1800	1630	1470	1300	1150	1000	850	760
	18-3/4	3 @ 6"	2480	2360	2130	1930	1710	1510	1310	1120	990
3/4" Copper 42 Fins/ft.	6-3/4	1	1250	1190	1080	980	860	760	660	560	500
	12-3/4	2 @ 6"	2120	2010	1820	1650	1460	1290	1120	950	850
	18-3/4	3 @ 6"	2790	2650	2400	2180	1930	1700	1480	1260	1120
3/4" Copper 50 Fins/ft.	6-3/4	1	1390	1320	1200	1080	960	850	740	630	560
	12-3/4	2 @ 6"	2360	2240	2030	1840	1630	1440	1250	1060	940
	18-3/4	3 @ 6"	3090	2940	2660	2410	2130	1880	1640	1390	1240
1" Copper 34 Fins/ft.	6-3/4	1	1110	1050	950	870	770	680	590	500	440
	12-3/4	2 @ 6"	1880	1790	1620	1470	1300	1150	1000	850	750
	18-3/4	3 @ 6"	2470	2350	2120	1930	1700	1510	1310	1110	990
1" Copper 42 Fins/ft.	6-3/4	1	1240	1180	1070	970	860	760	660	560	500
	12-3/4	2 @ 6"	2100	2000	1810	1640	1450	1280	1110	950	840
	18-3/4	3 @ 6"	2760	2620	2370	2150	1900	1680	1460	1240	1100
1" Copper 50 Fins/ft.	6-3/4	1	1370	1300	1180	1070	950	840	730	620	550
	12-3/4	2 @ 6"	2330	2210	2000	1820	1610	1420	1230	1050	930
	18-3/4	3 @ 6"	3060	2910	2630	2390	2110	1870	1620	1380	1220
1-1/4" Copper 34 Fins/ft.	6-3/4	1	1110	1050	950	870	770	680	590	500	440
	12-3/4	2 @ 6"	1890	1800	1630	1470	1300	1150	1000	850	760
	18-3/4	3 @ 6"	2480	2360	2130	1930	1710	1510	1310	1120	990
1-1/4" Copper 42 Fins/ft.	6-3/4	1	1230	1170	1060	960	850	750	650	550	490
	12-3/4	2 @ 6"	2100	2000	1810	1640	1450	1280	1110	950	840
	18-3/4	3 @ 6"	2740	2600	2360	2140	1890	1670	1450	1230	1100
1-1/4" Copper 50 Fins/ft.	6-3/4	1	1350	1280	1160	1050	930	820	720	610	540
	12-3/4	2 @ 6"	2300	2190	1980	1790	1590	1400	1220	1040	920
	18-3/4	3 @ 6"	3010	2860	2590	2350	2080	1840	1600	1350	1200

• Refer to page 11 for correction factors for other mounting heights.

• Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.

• Finned length is the specified element length - 6" (3" plain end each side).

► Bold, italicized units are



MODEL CP PERFORMANCE

Table 46.1 - Steam and Hot Water Ratings - Fin Size - 3-1/4" x 2-3/4"

FIN SIZE - 3-1/4" X 2-3/4" ALUMINUM										
Heating Element Fin Spacing	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
			210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	1	880	840	760	690	610	540	470	400	350
3/4" Copper 42 Fins/ft.	1	970	920	830	760	670	590	510	440	390
3/4" Copper 50 Fins/ft.	1	1050	1000	900	820	720	640	560	470	420
1" Copper 34 Fins/ft.	1	870	830	750	680	600	530	460	390	350
1" Copper 42 Fins/ft.	1	940	890	810	730	650	570	500	420	380
1" Copper 50 Fins/ft.	1	1020	970	880	800	700	620	540	460	410
1-1/4" Copper 34 Fins/ft.	1	850	810	730	660	590	520	450	380	340
1-1/4" Copper 42 Fins/ft.	1	920	870	790	720	630	560	490	410	370
1-1/4" Copper 50 Fins/ft.	1	990	940	850	770	680	600	520	450	400

Table 46.2 - Steam and Hot Water Ratings - Fin Size - 4-1/4" x 2-3/4"

FIN SIZE - 4-1/4" X 2-3/4" ALUMINUM										
Heating Element Fin Spacing	Rows of Element	1 PSI Steam	Hot Water Ratings - BTU/HR/FT - AWT °F							
			210	200	190	180	170	160	150	140
3/4" Copper 34 Fins/ft.	1	1000	950	860	780	690	610	530	450	400
3/4" Copper 42 Fins/ft.	1	1140	1080	980	890	790	700	600	510	460
3/4" Copper 50 Fins/ft.	1	1280	1220	1100	1000	880	780	680	580	510
1" Copper 34 Fins/ft.	1	990	940	850	770	680	600	520	450	400
1" Copper 42 Fins/ft.	1	1120	1060	960	870	770	680	590	500	450
1" Copper 50 Fins/ft.	1	1250	1190	1080	980	860	760	660	560	500
1-1/4" Copper 34 Fins/ft.	1	960	910	830	750	660	590	510	430	380
1-1/4" Copper 42 Fins/ft.	1	1080	1030	930	840	750	660	570	490	430
1-1/4" Copper 50 Fins/ft.	1	1200	1140	1030	940	830	730	640	540	480

- Refer to page 11 for correction factors for other mounting heights.
- Ratings are based on finned length with 65°F entering air, 1 PSI steam or average water temperature (215°F) at 3 ft/sec. water velocity. These water ratings, applicable to water flow rates of three or more feet per second, have been determined by applying the factors listed on page 11 to the AHRI Steam Ratings, which have been approved by AHRI.
- Finned length is the specified element length - 6" (3" plain end each side).

SPECIFICATIONS

Heating Elements

Copper tube/Aluminum fin elements are available in 3/4, 1, and 1-1/4 inch outer diameter seamless copper tubing. Fins are either 2-3/4 x 3-1/4, 2-3/4 x 4-1/4, or 4-1/4 x 4-1/4 inches with 34, 42, or 50 fins/ft., and are unpainted and bonded to the tube by mechanical expansion of the tube. Maximum element length is 8 feet for 3/4 and 1 inch diameter tubes and 12 feet for 1-1/4 inch diameter tubes. Maximum working pressure at 300° F is 250 psi for 3/4 inch tubes, 185 psi for 1 inch tube and 190 psi for 1-1/4 inch tubes.

Hangers and Supports

Enclosure wall supports attach to the 20 gauge aluminized steel hanger strip. Enclosure wall supports may be placed at any location along the hanger strip allowing installation directly over wall supports.

One fastener is required for each enclosure wall support in order to properly secure it.

Enclosure wall supports have a V-bend at the bottom which fully engages the enclosure and supports its weight.

Element support assembly and return pipe hangers hook into the wall support “pegboard style”.

Enclosure and element supports are die-formed in 16 gauge galvanized steel with integral stiffening ribs. All return pipe hangers are wire formed for ease of adjustment. No fasteners or sub-assembly are required for any element or return pipe support.

Element support cradles give two-point support to the element and allow over 2-1/2 inches of lateral movement. Cradles slide on full bearing polymeric discs and are held in place with a polymeric rivet.

Fin Tube Enclosures

All standard Commercial enclosures are manufactured in 18 gauge (14 gauge for model PS) cold-rolled steel. Enclosure lengths range from 2 feet to 8 feet in 6 inch increments.

Air discharge louver banks are 3 inches on center and have a “pencil proof” design.

All standard enclosures have a tan color, baked-on polyester powdercoat paint finish, which may be used as a final coat or repainted.

All enclosure styles include interlocking slip-joints for smooth hairline joints, with no fasteners required. All friction clips and back-up strips include stiffening angles for added reinforcement at all enclosure joints.

Fin Tube Element Covers

Types FT and EM element covers overlap and clip over the fin area of the element. No hanger strip is required. The element must be supported by either a fixed bracket (FB) or expansion bracket (EB).

All covers are made of 18 gauge steel and are finished in tan baked on polyester powdercoat paint finish. Type EM covers butt together. Type FT covers overlap one another. Cover straps are available for use with multiple rows of element, to secure the cover to the lower row of element.

Accessories

Accessories are manufactured in either 14, 18, or 20 gauge cold-rolled steel, depending on the piece. Accessories are cleaned, phosphatized, and finished with a baked on polyester powdercoat paint finish to match enclosures. Valve compartments, end caps, and end enclosures have slip joints to attach to the end of the enclosure. Corners and extensions are telescoping and overlap adjacent corners. They incorporate fold-over tabs to secure the accessory to the enclosure without fasteners, except for model PS accessories which attach to the enclosure with tamperproof fasteners.

Products from Modine are designed to provide indoor air-comfort and ventilation solutions for residential, commercial, institutional and industrial applications. Whatever your heating, ventilating and air conditioning requirements, Modine has the product to satisfy your needs, including:

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Specific catalogs are available for each product. Catalogs 75-136 and 75-137 provide details on all Modine HVAC equipment.



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Radiator Installation Instructions

Horizontal Radiators

1. Radiators are boxed together in as few crates as possible. A box of brackets is included as a separate piece, and it is marked to denote brackets. Inside the crates, each panel is wrapped in foam sheeting. Saving this foam to re-wrap the panel once it is wall mounted will protect it from construction site damage.
 2. Each radiator is tagged with a label that indicates the project name, model type, color, connection code, bracket type & quantity and tag number. The tag number will usually designate a floor level and room number for easier placement on the job. Locate each radiator as required.
 3. Carefully place each radiator face down on a smooth level surface (e.g. floor or table). Distribute the K12 wall brackets for each radiator. The tag on the radiator indicates the quantity of brackets. Mount the brackets securely on wall studs, spacing them as evenly as possible at 2 to 4 feet apart, with a bracket at least 12 inches from each end of the panel. Allow a minimum of 3 inches below each panel radiator to facilitate cleaning and to assure proper output. For baseboard models, 2 inches or even 1 inch above the floor is permissible with little loss of heat output.
- 4A. RADIATORS WITH FINS
(BACK SIDE OF PANEL)**
- With the radiator face down, attach each K12 clip to the fins at the stud location. With the radiator still face down, thread the K45 offset bolts (5/16" carriage bolts) into the bottom threaded positions with a crescent wrench. Once the bolts have cleared the paint away, they should turn easily by hand. Attach the K12 bracket to the wall stud with 2 lag bolts. Hang the panel onto the brackets to determine if the K45 offset bolts are properly adjusted. Check that the panel is level.
- 4B. RADIATORS
(NO FINS ON BACK SIDE OF PANEL)**
- With the radiator face down, attach each K12 clip to the radiator's perforated steel mounting channel at the K12 stud locations. With the radiator still face down, thread the K45 offset bolts (5/16" carriage bolts) into the bottom threaded positions with a crescent wrench. Once the bolts have cleared the paint away, they should turn easily by hand. Hang the panel onto the brackets to determine if the K45 offset bolts are properly adjusted. Check that the panel is level.
5. Remove the radiator from the wall, and thread the supply and return fittings into the connections on the panel. The sealing tape or pipe dope used is the installer's choice – make sure the connections are leak tight. One quarter of a turn past hand tight is usually sufficient. Use the foam wrap as a pad for the face of the panel while tightening up the fittings. Each radiator needs to be fitted with a 1/8" air vent prior to startup.
 6. **FLOOR POST & PEDESTAL MOUNTED RADIATORS**
When using floor posts, each post must line up with a corresponding K45 offset bolt attached to the back side of the radiator. Using this spacing as a guide, securely fasten each floor post to the floor, using appropriate fasteners. The K12 wall bracket is attached to the floor post, and the K12 clip to the radiator, as described in step #4. The nut and bolt used to attach the K12 bracket to the floor post is to be supplied by others.
For pedestal mounting, the pedestals should be arranged so that the end pedestals sit within 12 inches of each end of the radiator, with the remainder spaced evenly along the radiator's length. Each pedestal should be securely fastened to the floor using appropriate fasteners. Radiators sit on the pedestals, with the "fingers" of the pedestals sticking up between the fins to provide stability.
 7. Radiators expand a maximum of 0.016 inch per linear foot of length if heated to 215°F. Piping attached to the radiator must provide the necessary expansion compensation.
 8. Once the radiators are installed, the system can be tested to 50 psi. **DO NOT OVER-PRESSURIZE THE RADIATORS** as permanent damage may be done.

**Standard Pressure Panels
Maximum 56 psi**

**Medium Pressure Panels
Maximum 85 psi**

**High Pressure Panels
Maximum 128 psi**

When the system has been shown to hold 50 psi maximum air, the piping and radiators can be filled with water. As water fills the system and radiators, air is forced to the vent fittings. Vent as much air as possible before turning on the circulating pump(s).

9. When the system is filled, operate the circulator(s) to force the remaining air to the high points of the system. With the system pressurized, turn off the circulator(s) to vent the panels. Each radiator should be individually bled of air. Once cold venting has been completed, heat the system to design temperature and repeat the venting procedure as many times as necessary to remove all air from the system.