Architectural Hydronic Wall Fin

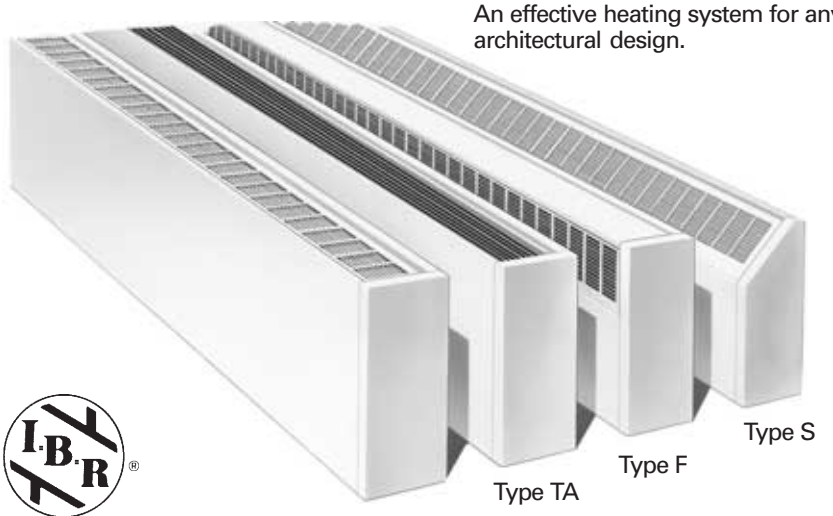
October 2001

FIN-PRC004-EN

Features and Benefits

A Complete Line of Wall Fin
Trane architectural wall fin is ideal for heating modern commercial, institutional or industrial buildings. Attractive styling and wide application flexibility allow wall fin cabinet designs to be used for virtually any application. Available for hydronic or steam heating, Trane wall fin can also be used in combination with convectors for smaller areas, allowing for the use of one source when designing a radiation heating system. (See FIN-DS-2 for convector applications.)

An effective heating system for any office. Attractive styling that blends with any architectural design.



Trane Wall Fin — Simply the Best
Wall fin effectively meets the heating needs of long, open areas. It counters cold air downdrafts common to expansive glass areas used in many of today's most prestigious buildings.

- Provides continuous heat along room perimeter.
- Allows removal of any unit panel for service accessibility.
- The front panel never touches the wall — only Trane's exclusive mounting strip.
- The front panel can be raised or removed without disturbing the unit or damaging wallpaper, paint or the plaster seal.
- Operates quietly because there are no moving parts.
- Controls with the damper or valve individually.
- Blends well with any decor.
- Works effectively with cooling-only VAV and heat recovery systems.
- Includes 14 or 16-gauge front panels.
- Unit vent draft barrier enclosures.
- Pipe enclosures for use with ForceFlo and Fan Coil Units.

Wall Fin
I=B=R Certified Ratings for Trane Wall Fin
The I=B=R symbol is the registered trademark of the Hydronics Institute which tests and rates in strict accordance with published standard wall fin elements and elements with enclosures. The wall fin heating units must conform to appropriate test standards to have certified I=B=R ratings.

Why Hydronics?
Besides the reliability of equipment ratings, and the well established reliability of hydronic accessories, there are many good reasons why hydronic systems have long been recognized as the standard method for providing indoor comfort.

Hydronic heating, whether steam or hot water, provides positive, controlled circulation of the heating medium. Systems are basically self-balancing, and in larger, more complicated heating systems, balancing is positively controlled by familiar valves and thermostats.

The life of some hydronic equipment may be measured in decades; some existing boilers are more than fifty years old. In addition to the high efficiency of boilers (some over 85%) the losses through the distribution system are extremely low on modern installations.

Temperature control is close to ideal with hydronics. Any well-designed system can provide excellent comfort, without drafts or sharp swings in temperature.

The flexibility of hydronic installations permits a variety of piping arrangements, simple or sophisticated controls, and a large choice of room distribution units for all comfort applications.

Contents

Architecural Wall Fin

Features and Benefits 2
Application Considerations 6
Selection Procedure 7
Performance Data 14
Dimensional Data 41
Options 54
Mechanical Specifications 56

Security Wall Fin

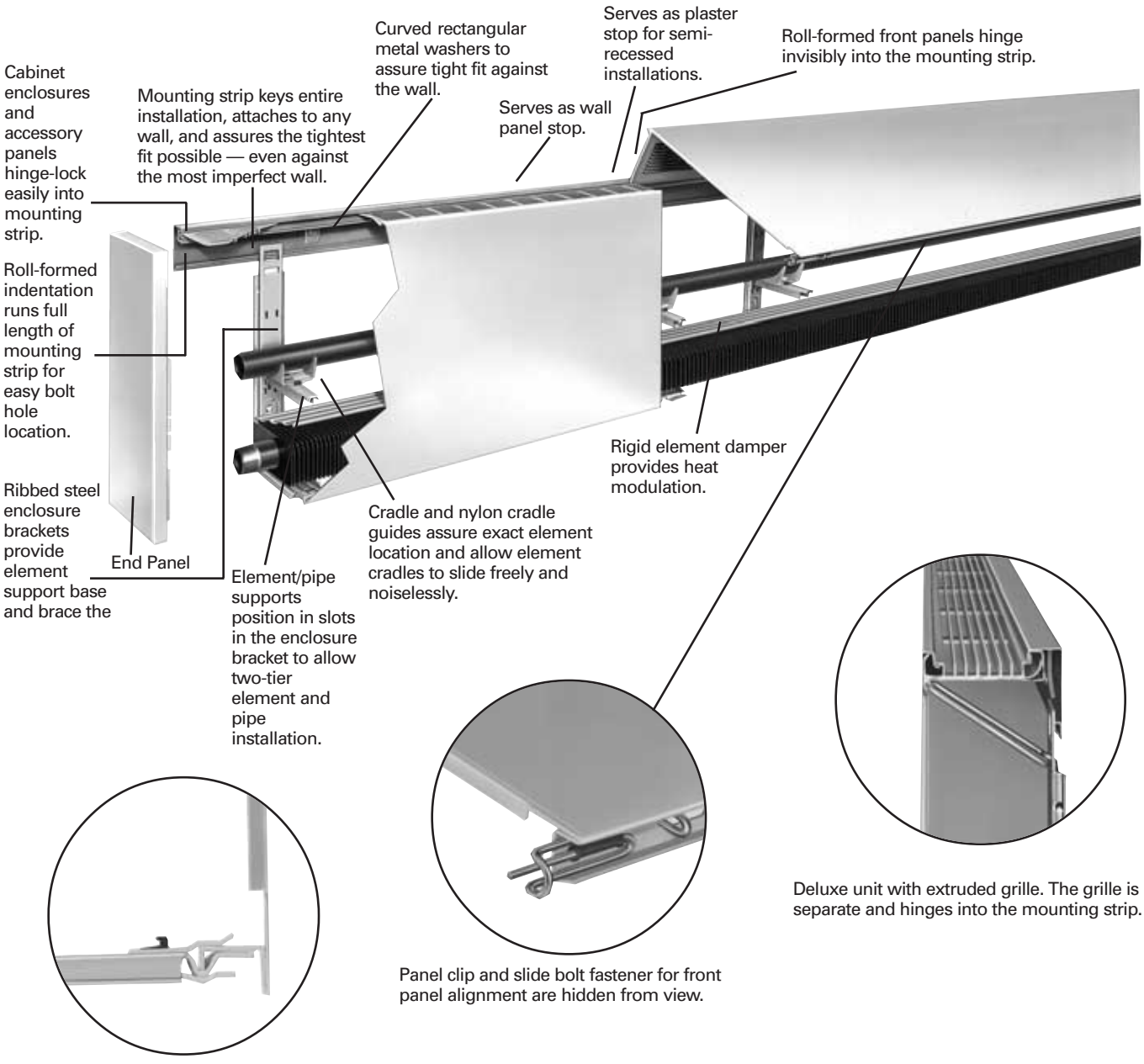
Features and Benefits 74
Accessories 75
Model Number Description 76
Performance and General Data 77
Dimensional Data 85
Mechanical Specifications 91

Hydronic Light Commercial Slope Top Wall Fin — Model 11S

Features and Benefits 93
Performance and General Data 96
Dimensional Data 98
Cover and Accessory Layout 100
Mechanical Specifications 101

Features and Benefits

A simple installation designed to last without visible fasteners — Trane's exclusively designed mounting strip makes it possible.



Locking clip slides over panel lip to hold it securely to bracket.

Panel clip and slide bolt fastener for front panel alignment are hidden from view.

Deluxe unit with extruded grille. The grille is separate and hinges into the mounting strip.

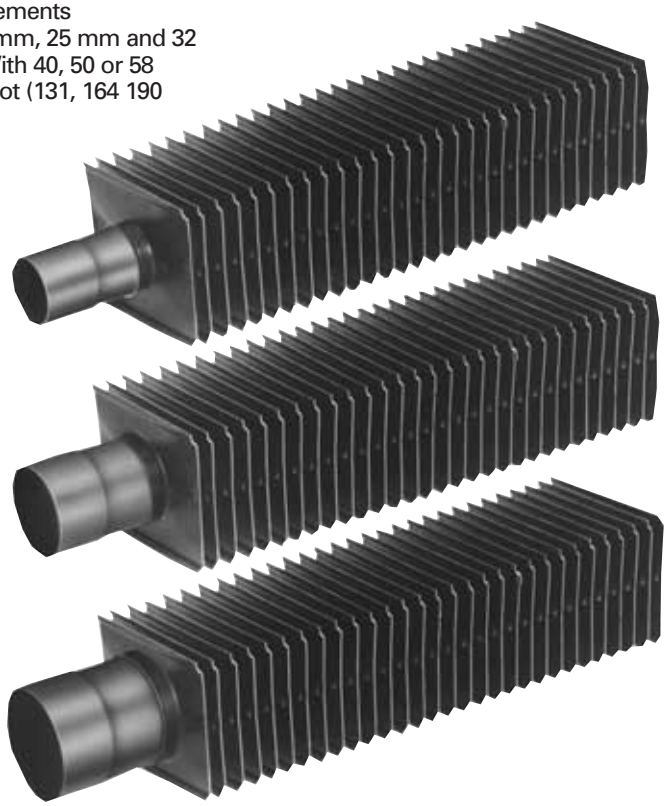
Features and Benefits

Hydronic Heating Elements — Copper/ Aluminum and Steel
Copper-Aluminum Elements
3/4", 1" and 1 1/4" (19 mm, 25 mm and 32 mm) Copper Tubes With 40, 50 or 58 Aluminum Fins per foot (131, 164 190 per meter).

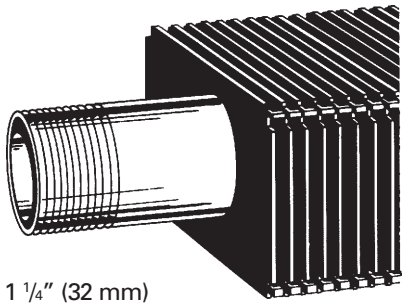
3/4" (19 mm)

1" (25 mm)

1 1/4" (32 mm)

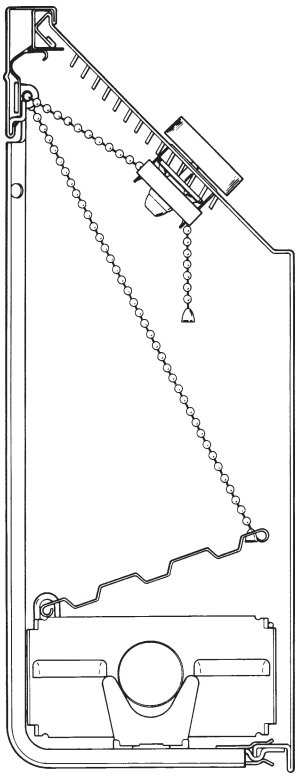


Steel Elements — Standard options feature 1 1/4" (32 mm) steel tube with 52 steel fins per foot (171 per meter).



1 1/4" (32 mm)

Positive Temperature Control
- Efficient element-mounted damper.
- Reduces unit capacity by 70 percent.
- Has jam-proof bead chain control system.
- Control knob is mounted on the outlet grille.



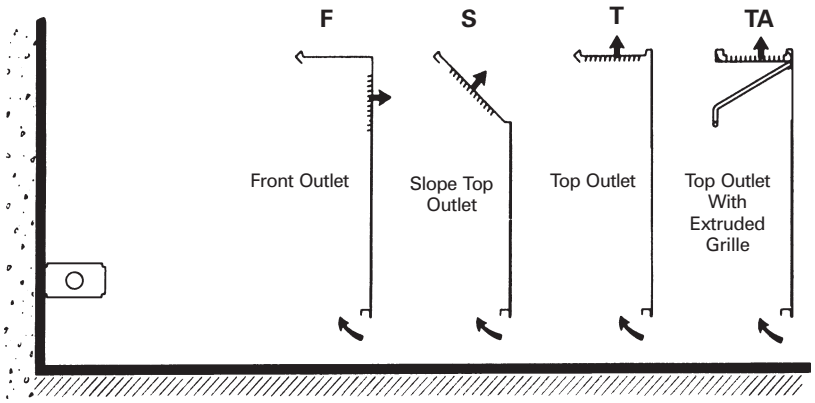
For Models S, F, T & TA

- Elements available in copper-aluminum or steel.
- Elements are efficient and long lasting.
- Element tubes mechanically expanded into fin collars.
- Fin collars provide even and positive spacing for even air distribution.
- The mechanical bond assures an efficient and durable element assembly.
- Fins cannot work loose.

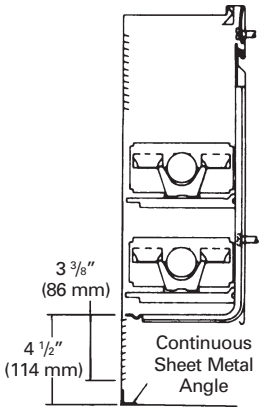
Application Considerations

A Heating System and Style to Suit Any Application

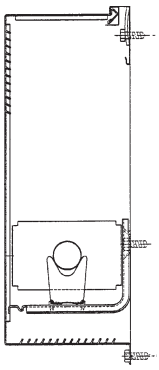
Wall Mounted



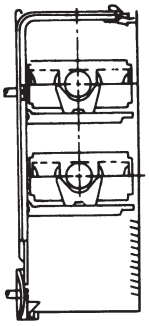
Wall Mounted Cabinet Options



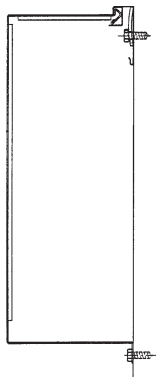
Front Inlet Grille



Bottom Inlet Grille

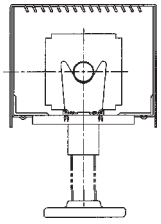


Inverted Enclosure

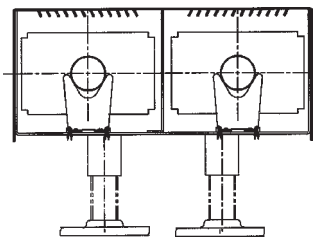


Pipe Enclosure

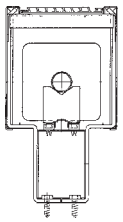
Floor Mounted



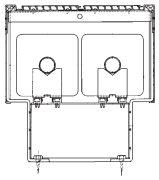
Type E3



Type E3-2W

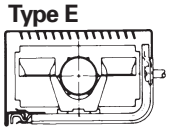


Type E3A-1W

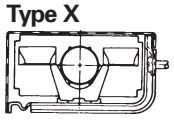


Type E3A-2W

Type E

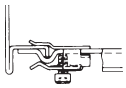


Type X



Enclosure styles meet the heating needs of long, open areas in any interior.

- Wall-mounted wall fin enclosures available in depths of four and six inches (102 mm, 152 mm).
- Enclosure depth is determined by the type of element to be used.
- See pages 13 through 43 and Tables PD-1 through PD-25 for details.
- Front inlet grilles.
- Bottom inlet grilles.
- Inverted enclosures for styles S, F and T enclosures only.
- Tamperproof fastener option.
- Pipe Enclosures

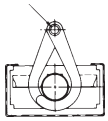


Tamperproof Fastener

Ceiling Mounted

Type CS

1/2" (13 mm) Dia. Mtg. Hole



- Ceiling-mounted wall fin enclosures available in depths of four and six inches (102 and 105 mm).
- See pages 13, 14, 15 and 49.

- Pedestal wall fin enclosures available with one or two wide elements.
- See pages 36, 37, 42, 53, 54, 55, 56, 57 and 58 and Tables PD-24, PD-25, M-1, M-2, M-3, M-4 and M-5.

Selection Procedure

Hydronic/Steam Wall Fin Selection

Hot Water Systems

The capacity rating of wall fin in a hot water heating system depends on the difference between average water temperature and entering air temperature, and on the velocity at which water is circulated through the tube. The effect of water velocity on the capacity rating is appreciable (see Chart S-1) and should be taken into account when selecting wall fin. Following are example selections for hot water systems.

Hot Water Systems

Example 1

Assume a two-pipe system is being used with 180°F average water temperature, 20°F temperature drop and 65°F entering air temperature. Assume a calculated heat loss of 20,000 Btu, for which one row of 1 ¼" steel element in a Type 12S enclosure is desired.

From Chart S-1, reading from 20,000 Btu (under 20°F temperature drop) across to a 1 ¼" steel element and down, indicates a water velocity of approximately .45 ft/sec. The water velocity correction factor corresponding to .45 ft/sec is .920. The radiation is selected so that it would deliver

$$\frac{\text{20,000 Btu (calculated heat loss)}}{\text{0.920 (velocity correction factor)}}$$

or 21,739 Btu if the water velocity were 3 ft/sec. It will then deliver the required 20,000 Btu at the actual water velocity of .45 ft/sec.

From Table PD-8, the output of 1 ¼" steel, Series 52 element in a Type 12S enclosure is (looking under 180°F average water, 65°F entering air) 1060 Btu/lineal foot at 3 ft/sec water velocity. Wall fin required:

$$\frac{\text{21,739 Btu}}{\text{1060 Btu/ft}} = \text{20.5 lineal feet.}$$

Length Selection — Loop Systems

Example 2

If the unit in Example 1 above was part of a 100,000 Btu loop with a 20°F drop (across the entire loop) the water velocity through the loop would be 2.20 ft/sec and the water velocity correction factor for all units on this loop would be approximately .987. For the unit being considered, the radiation would be selected to deliver 20,300

$$\left(\frac{\text{20,000}}{\text{.987}}\right)$$

Btu at 3 ft/sec water velocity.

Steam Systems — Selecting Wall Fin Lengths

The capacity rating of wall fin in a steam heating system depends upon the difference between the steam temperature and the entering air temperature. For any steam system, to establish the lineal feet of wall fin required: divide the heat loss by the capacity rating per foot at the steam system and entering air conditions.

Ratings for 1 psi steam and 65°F entering air can be found on Tables PD-1 through PD-21. Ratings for other steam and air conditions can be obtained by multiplying the 1 psi — 65°F capacity ratings by the proper steam correction factor from Table S-2.

Example 1

Assume a steam system with 1 psi steam and 65°F entering air conditions. Also assume a 15,000 Btu heat loss for which a 1" copper-aluminum element 40 fins/foot in a Type 10S enclosure is desired.

Wall fin required:

$$\frac{\text{15,000 Btu}}{\text{1080 Btu/ft}} = \text{13.9 lineal feet.}$$

Example 2

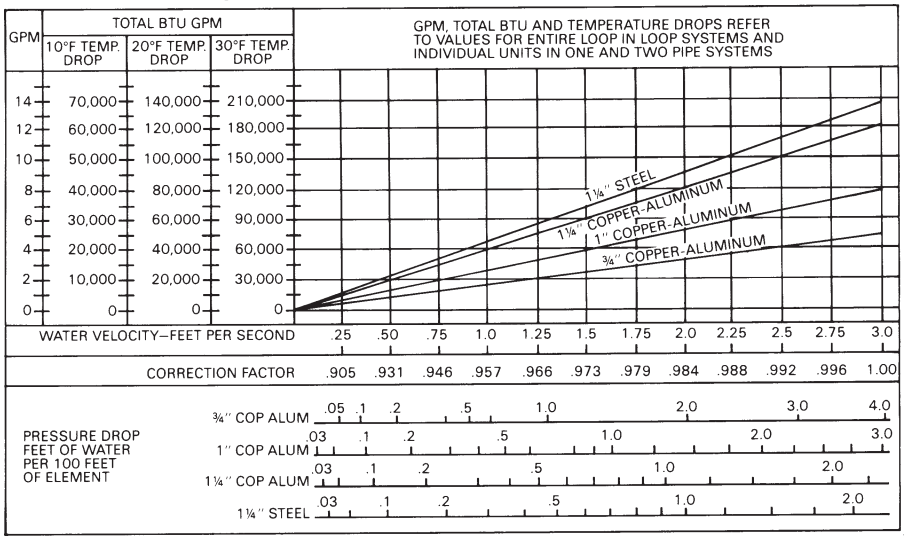
Assume a steam system with 20 psi steam and 55°F entering air conditions. Also assume a 25,000 Btu heat loss for which 2 rows of 1 ¼" steel, Series 40 element on 9 ½" centers will be used without a cover. The capacity rating per lineal foot from Table PD-3 at 1 psi steam and 65°F entering air is 2120 Btu/ft. Multiplying this capacity rating by 1.52 (steam correction factor from Table S-2) gives a rating of 3222 Btu/ft with 20 psi steam and 55°F entering air.

Wall fin required: $\frac{\text{25,000 Btu}}{\text{3222 Btu/ft}}$

= 8 lineal feet, 2 rows high.

Selection Procedure

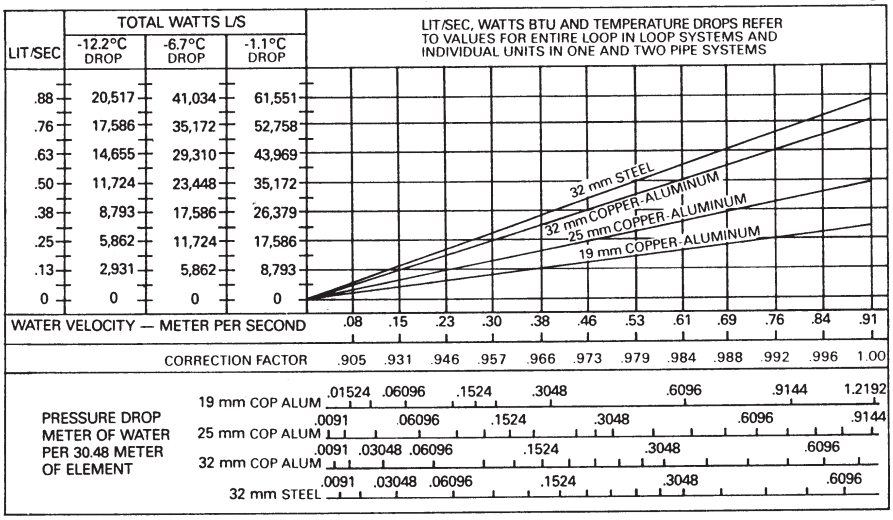
Chart S-1 — Water Velocity Correction Factors — Pressure Drops ***ENGLISH***



All Catalog Capacities Based On 3.0 Feet Per Second Water Velocity.*

$$*\text{Correction Factor} = \left(\frac{\text{Water Velocity}}{3} \right) .04$$

SI



Selection Procedure

Effect of Temperature Drop On Fin-Tube Ratings

The effect of temperature drop on heat output of a wall fin element can be readily determined. Select the heating element using average water temperature (entering water temperature minus ½ water temperature drop) and correct for water velocity as follows:

By use of the relationship,

$$GPM = \frac{BTU}{*500 \times \text{Water Temperature Drop}}$$

the waterflow rate for a wall fin unit of the required Btu and at a definite temperature drop, is easily calculated. (Many engineers use gallons per minute as the basis for selecting pipe sizes, since charts are set up on this basis in the ASHRAE Guide. Therefore, this would not be an extra step.)

The heat output of a given wall fin unit will vary somewhat with different water velocities, all other conditions being equal. From Chart S-1, the water velocity can be found for a wall fin element of the particular tube size and gpm waterflow required. The velocity correction factor can be determined by using Chart S-1.

Table S-1 — Pipe Water Capacities and Quantities Circulated at Velocity of 3* Feet Per Second (.91 m/s)

Nominal Pipe Size	Expanded ID	Gals. Per Linear Ft.	Liters Per Meter	Gals./Min. @ 3' Sec. Vel.*	Liters per Sec. @ .91 M/Sec. Vel.	Lbs./Hr. @ 3' Sec. Vel.*	Kg/S @ .91 m Sel. Vel.
¾" CA (19 mm)	0.836" (21 mm)	.029	.36	5.13	.324	2,555	.322
1" CA (25 mm)	1.073" (27 mm)	.047	.58	8.45	.533	4,215	.531
1 ¼" CA (32 mm)	1.311" (33 mm)	.070	.87	12.6	.795	6,285	.792
1 ¼" ST (32 mm)	1.40" (36 mm)	.080	.99	14.39	.908	7,170	.903

*3 Ft./Sec. (.91 m/Sec) Velocity is Basis for Hot Water Rating Factors Shown in Chart S-1.

Velocity Ft./Sec. = $\frac{\text{Lbs. Per Hour}}{(\text{Gals. Per Ft.})\ (3600)\ (8.3)}$

For quiet operation, a maximum of 5 ft/sec (1.5 m/Sec) velocity is recommended.

Table S-2 — Wall Fin Rating Correction Factors*

Steam Press.		Steam Temp.		Entering Air Temperature												
PSIG	kPa	(F)	(c)	45°F 7°C	55°F 13°C	65°F 18C	70°F 21°C	75°F 24°C	80°F 27°C	85°F 29°C	90°F 32°C	100°F 38°C	110°F 43°C	120°F 49°C	130°F 54°C	140°F 60°C	150°F 66°C
0	0	212.0	100.0	1.19	1.09	0.97	0.92	0.87	0.82	0.77	0.70	0.63	0.54	0.46	0.38	0.31	0.25
.899	6.2	215.0	101.7	1.22	1.11	1.00	0.95	0.90	0.84	0.80	0.75	0.65	0.57	0.48	0.40	0.33	0.26
5	34.5	227.1	108.4	1.34	1.22	1.11	1.05	1.00	0.95	0.90	0.81	0.75	0.66	0.57	0.49	0.41	0.34
10	69.0	239.4	115.2	1.45	1.33	1.22	1.17	1.11	1.05	1.00	0.91	0.85	0.75	0.66	0.58	0.50	0.42
20	137.9	258.8	126.0	1.63	1.52	1.40	1.33	1.28	1.23	1.17	1.07	1.02	0.92	0.82	0.73	0.64	0.55
30	206.9	274.0	134.4	1.78	1.66	1.54	1.48	1.42	1.37	1.31	1.21	1.15	1.05	0.95	0.85	0.76	0.68
40	275.8	286.7	141.5	1.91	1.79	1.66	1.61	1.54	1.49	1.43	1.32	1.27	1.16	1.06	0.97	0.87	0.78
50	344.8	297.7	147.6	2.02	1.90	1.77	1.71	1.65	1.60	1.54	1.42	1.37	1.26	1.16	1.06	0.96	0.87
100	689.5	337.9	169.9	2.43	2.31	2.18	2.11	2.05	2.00	1.94	1.81	1.77	1.65	1.54	1.44	1.33	1.23

*For steam pressures and air temperatures other than 1 psi and 65°F (6.895 kPa and 18.3°C). For process applications, deduct heating effect after applying above factor to 1 psi, 65°F (6.895 kPa, 18.3°C air) air rating for desired element arrangement.

Selection Procedure

Table S-3 — Correction Factors for Non-Standard Average Water Temperatures

Average Water Temp. (F)	(C)	Entering Air Temperature 45°F 7°C	50°F 10°C	55°F 13°C	60°F 16°C	65°F 18°C	70°F 21°C	75°F 24°C	80°F 27°C	85°F 29°C
170	77	.82	.77	.72	.67	.61	.57	.53	.48	.44
180	82	.91	.86	.81	.75	.69	.65	.61	.56	.52
190	88	1.00	.94	.89	.84	.78	.73	.69	.64	.60
200	93	1.09	1.03	.97	.92	.86	.81	.77	.72	.68
210	99	1.18	1.12	1.06	1.01	.95	.90	.85	.80	.76
220	104	1.27	1.21	1.15	1.09	1.05	.98	.93	.88	.84
230	110	1.37	1.30	1.24	1.19	1.14	1.08	1.03	.98	.93
240	116	1.47	1.41	1.35	1.29	1.25	1.17	1.12	1.07	1.02
250	121	1.57	1.50	1.44	1.38	1.32	1.26	1.20	1.15	1.10
260	127	1.67	1.60	1.52	1.46	1.40	1.34	1.29	1.24	1.20
270	132	1.78	1.70	1.62	1.56	1.50	1.44	1.39	1.34	1.29
280	138	1.88	1.80	1.72	1.66	1.60	1.54	1.48	1.43	1.38
290	143	1.98	1.90	1.82	1.75	1.69	1.63	1.58	1.52	1.48
300	149	2.08	2.00	1.92	1.85	1.79	1.73	1.67	1.62	1.57

NOTE: To determine capacity of non-standard conditions, multiply the corresponding factor above by the BTU (Watts/meter) steam rating found on pages 13-37.

*The weight of a U.S. gallon of water at 60°F is 8.33 pounds. At a flow rate of 1 U.S. gpm, the weight of the water circulated through the system in one hour is 1.0 x 8.33 multiplied by 60 minute = 500 pounds.

Table S-4 — Factors Used to Convert 1 PSI Steam Ratings to Hot Water Ratings at Temperatures Indicated

Average Water Temperature (F)	(C)	Correction Factor
100°F	38°C	0.15
110°F	43°C	0.20
120°F	49°C	0.26
130°F	54°C	0.33
140°F	60°C	0.40
150°F	66°C	0.45
155°F	68°C	0.49
160°F	71°C	0.53
165°F	74°C	0.57
170°F	77°C	0.61
175°F	79°C	0.65
180°F	82°C	0.69
185°F	85°C	0.73
190°F	88°C	0.78
195°F	91°C	0.82
200°F	93°C	0.86
205°F	96°C	0.91
210°F	99°C	0.95
215°F	102°C	1.00
220°F	104°C	1.05
225°F	107°C	1.09
230°F	110°C	1.14
235°F	113°C	1.20
240°F	116°C	1.25

Note: To determine capacity at non-standard conditions, multiply the corresponding factor above by the BTU (Watts/meter) steam rating found on pages 13-37.

Selection Procedure

Rating Adjustment for Greater Than Cataloged Installed Height-Heating Effect

Ratings in Tables PD-1 through PD-25 include the factor shown in Table S-5 for installed heights recommended. Installed height defines the installed location that is the basis for the published rating and determines the percentage which may be added to condensation capacity. If the unit is installed at a different height than recommended, the following computation applies:

$$\text{Capacity at actual installed height} = \text{Rated Capacity} \times \frac{\text{(Table S-5 factor for actual installed height)}}{\text{(Table S-5 factor for recom. installed height)}}$$

Example

A 12S enclosure is to be installed 6" above the recommended installed height. Compute the new capacity rating:

Wall Fin Correction Factors Selection

1

Actual installed height is 19 $^{7}/_{32}$" (13 $^{7}/_{32}$" from Table PD-8 + 6" (152 mm)). Interpolating from Table S-5, the heating effect factor is 1.065.

2

Recommended installed height is 13 $^{7}/_{32}$ (from Table PD-8). From Table S-5, the heating effect is 1.075.

3

Actual capacity = rated capacity (Table PD-8) x $\frac{1.065}{1.075}$

Determining Pressure Drop

(Refer To Chart S-1)

One-Row Units — Read pressure drop per 100 feet (30.5 m) on one row assembly below the water velocity.

Two-Row Units, Serpentined (piped in series) — All water passes through both rows, so pressure drop per 100 feet (30.5 m) of assembly is twice the pressure drop below the water velocity.

Two-Row Units, Headered (piped in parallel) — Half the water flows through each row. The actual water velocity in each row is one-half the water velocity. The water velocity correction factor appears below the actual water velocity. Pressure drop will be the same for each row, so the drop per 100 (30.5 m) feet of assembly appears below the actual water velocity.

Table S-5 — Heating Effect Factors for Greater Than Cataloged Installed Heights

	Installed Heights (Inches)															
Type Enclosure	18" Or Less 457 mm	19" 483 mm	20" 508 mm	21" 533 mm	22" 559 mm	23" 584 mm	24" 610 mm	25" 635 mm	26" 660 mm	27" 686 mm	28" 711 mm	29" 737 mm	30" 762 mm	32" 813 mm	34" 864 mm	36" or More 914 mm
Bare Element	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
S	1.075	1.07	1.065	1.06	1.055	1.05	1.045	1.04	1.035	1.03	1.025	1.02	1.015	1.01	1.005	1.00
F	1.15	1.14	1.3	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
T, TA, E	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Installed height is vertical distance from floor to top of upper element for bare element; top of outlet grille for Type F enclosure; center of outlet grille for Type S enclosure; and underside of the outlet grille for Type T, TA or E unit.

Selection Procedure

Maximum Installed Lengths
Hot water systems velocity and pressure drop are two factors that will influence the maximum installed lengths of wall fin hot water systems. Velocity in any pipe size is dependent upon the capacity of the installed wall fin and the water temperature drop through the unit. Table S-6 gives the maximum installed capacity for any single wall fin unit or loop based on *5 ft./sec (1.5 m/sec). velocity through the tube (maximum recommended for quiet operation) and a 20°F (-6.7°C) water temperature drop.

The maximum recommended installed length for any element and enclosure combination can be determined by dividing the maximum recommended capacity from Table S-6 by the lineal foot capacity of the element and enclosure combination from the capacity table.

For headered two-row element installations (elements piped in parallel), the maximum capacity from Table S-6 can be doubled.

For water temperature drop other than 20°F (-6.7C), the maximum capacity may be determined as follows:

$$\text{Maximum Capacity} = \frac{\text{Max. Cap. (Table S-6)} \times \text{Actual Temp. Drop}}{\text{20°F Temp. Drop}}$$

Wall fin elements having the smallest tube sizes and highest velocities will give the most efficient heat output and the lowest pipe fitting costs. However, this should be balanced against lower pressure drops and perhaps a more economical circulating pump selection made possible with large tube sizes or larger temperature drops.

*Tables based on 3 ft/sec. (.91 m/sec.) velocity should not exceed 8 ft/sec (2.4 m/sec.) due to pipe corrosion.

Table S-6 — Hot Water Systems, Maximum Capacity*

Tube Size	1 1/4" Steel	2" Steel	1 1/4" Copper	1" Copper	3/4" Copper
Maximum Capacity	(32 mm)	(51 mm)	(32 mm)	(25 mm)	(19 mm)
(Btu Hr.)	240,000	530,000	210,300	140,800	85,500
(Watts)	70,344	155,343	61,639	41,268	25,060

*For low pressure systems. Based on 1/4 psi (1.7kPa) pressure drop per 100 feet (30.5 m).

Selection Procedure

Provisions For Expansion

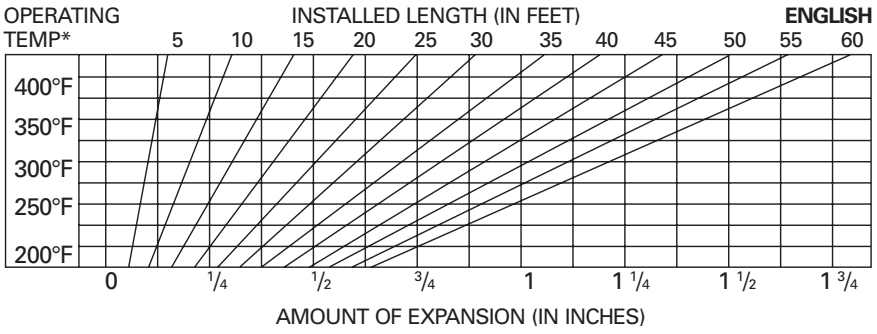
Copper tube wall fin elements and copper tubing, when installed at 40°F (4.4°C) and operated at 200°F (93°C) average water temperature, will expand as much as 1/8" (3.2 mm) in each 10' (3 m) length. Provisions must be made to accommodate this expansion at the heating element supports and at the ends of the wall fin elements and piping.

Packless expansion joints and flexible connectors are commercially available to accommodate expansion in a horizontal run of wall fin or at the ends of piping. Manufacturer's literature should be consulted for details.

Charts S-2 and S-3 give the total amount of expansion for various lengths of copper or steel tube when installed at 40°F (4.4°C) and operated at different hot water or steam temperatures.

*Based on wall fin installed at 40°F (4.4°C). For wall fin installed at other temperatures, subtract the installation temperature from the operating temperature to find the actual temperature difference. Add this difference to 40°F (4.4°C). Now read in Chart S-2 or S-3 from the temperature obtained across to installed length and down to the amount of expansion.

Chart S-2— Expansion in Steel Elements and Steel Pipe



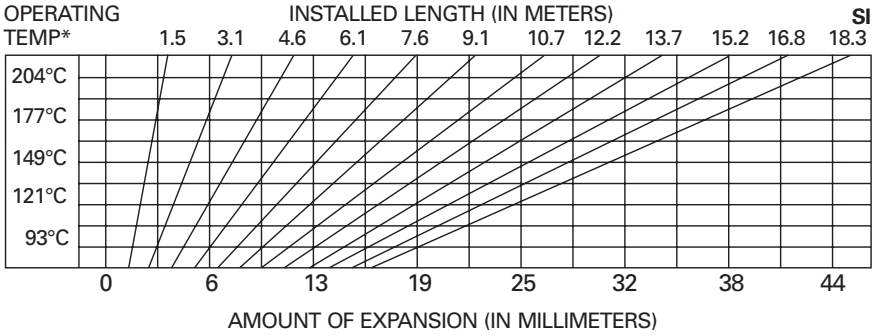
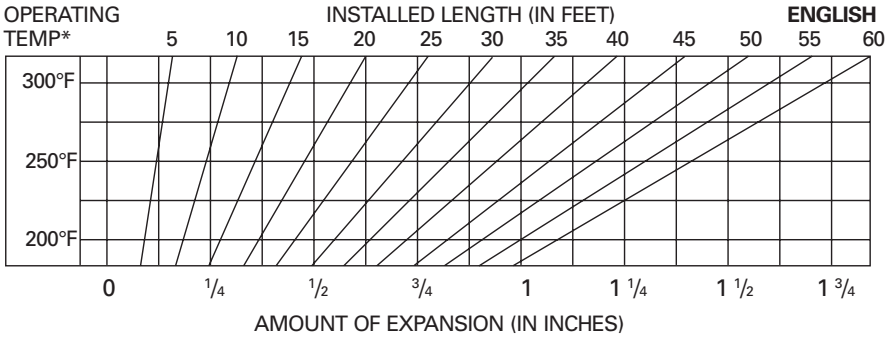
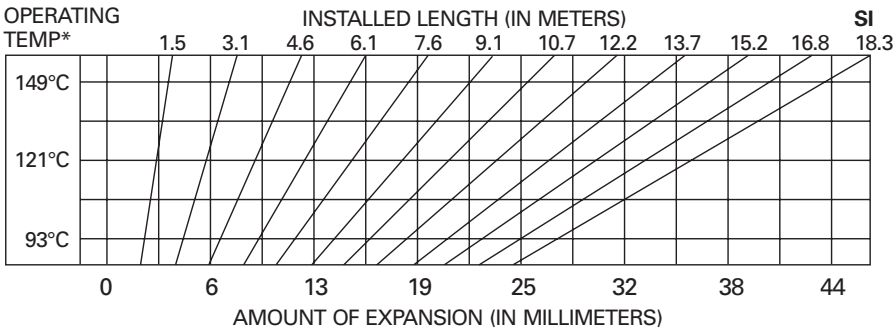


Chart S-3 — Expansion in Copper-Aluminum Elements and Copper Tube





Performance Data

Bare Element Capacities

Table PD-1 — Ratings of Wall Fin Copper/Aluminum Elements Without Enclosures

Element	Fin Series Per Foot **Per Meter**	Tiers	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
						IBR Factor — Steam to Hot Water												
						1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
		1	8 ½	4.62	1110	1055	1165	955	865	765	680	590	500	445	365	290	220	165
			216	**50**	**1070**	**1010**	**1120**	**918**	**832**	**736**	**654**	**567**	**481**	**428**	**351**	**279**	**212**	**159**
		2*	14	8.33	2000	2100	1900	1720	1560	1380	1220	1060	900	800	660	520	400	300
			356	**90**	**1920**	**2020**	**1830**	**1650**	**1500**	**1330**	**1170**	**1020**	**865**	**769**	**635**	**500**	**385**	**288**
¾" CA	40	2**	18	8.70	2090	2195	1985	1800	1630	1440	1275	1105	940	835	690	545	420	315
19 mm	**131m**		**457**	**94**	**2010**	**2110**	**1910**	**1730**	**1570**	**1380**	**1230**	**1060**	**904**	**803**	**664**	**524**	**404**	**303**
Copper Tube		3**	27 ½	11.75	2820	2960	2680	2425	2200	1945	1720	1495	1270	1130	930	735	565	420
Alum. Fins			**699**	**126**	**2710**	**2850**	**2580**	**2330**	**2120**	**1870**	**1650**	**1440**	**1220**	**1090**	**894**	**707**	**543**	**404**
Fins 3 ¼ " x 3 ¼"		1†	—	3.93	945	990	900	810	735	650	575	500	425	380	310	245	190	140
83 x 83 mm				**42**	**909**	**952**	**865**	**779**	**707**	**625**	**553**	**481**	**409**	**365**	**298**	**236**	**183**	**135**
Thickness .0135"		1	8 ½	512	1230	1290	1170	1060	960	850	750	650	555	490	405	320	245	185
.34 mm			**216**	**5510**	**1180**	**1240**	**1120**	**1020**	**923**	**817**	**721**	**625**	**534**	**471**	**389**	**308**	**236**	**178**
		2*	14	8.70	2090	2195	1985	1795	1630	1440	1275	1110	940	835	690	545	420	315
			356	**94**	**2010**	**2110**	**1910**	**1730**	**1570**	**1380**	**1230**	**1070**	**904**	**803**	**664**	**524**	**404**	**303**
	50	2**	18	9.33	2240	2350	2130	1925	1745	1545	1365	1185	1010	895	740	580	450	335
	164 m		**457**	**100**	**2150**	**2260**	**2050**	**1850**	**1680**	**1490**	**1310**	**1140**	**971**	**861**	**712**	**558**	**433**	**322**
		3**	27 ½	12.41	2980	3130	2830	2560	2325	2055	1815	1580	1340	1190	975	775	595	445
			699	**134**	**2870**	**3010**	**2720**	**2460**	**2240**	**1980**	**1740**	**1520**	**1290**	**1140**	**947**	**745**	**572**	**428**
		1†	—	4.35	1045	1095	990	900	815	720	635	555	470	420	345	270	210	155
				47	**1000**	**1050**	**952**	**865**	**784**	**692**	**611**	**534**	**452**	**404**	**332**	**260**	**202**	**149**
		1	8 ½	5.41	1300	1365	1235	1120	1015	895	795	690	585	520	430	340	260	195
			216	**58**	**1250**	**1310**	**1190**	**1080**	**976**	**861**	**764**	**664**	**563**	**500**	**413**	**327**	**250**	**188**
		2*	14	8.87	2130	2235	2025	1830	1660	1470	1300	1130	960	850	705	555	425	320
			356	**95**	**2050**	**2150**	**1950**	**1760**	**1600**	**1410**	**1250**	**1090**	**923**	**817**	**678**	**534**	**409**	**308**
	58	2**	18	9.66	2320	2435	2205	1995	1810	1600	1415	1230	1045	930	765	605	465	350
	190 m		**457**	**104**	**2230**	**2340**	**2120**	**1920**	**1740**	**1540**	**1360**	**1180**	**1000**	**894**	**736**	**582**	**447**	**337**
		3**	27 ½	12.75	3060	3215	2905	2630	2385	2110	1865	1620	1375	1225	1010	795	610	460
			699	**137**	**2940**	**3090**	**2790**	**2530**	**2290**	**2030**	**1790**	**1560**	**1320**	**1180**	**971**	**764**	**587**	**442**
		1†	—	4.60	1105	1160	1050	950	860	760	675	585	500	440	365	285	220	165
				50	**1060**	**1120**	**1010**	**914**	**827**	**731**	**649**	**563**	**481**	**423**	**351**	**274**	**212**	**159**

Performance Data

Table PD-1 — Ratings of Wall Fin Copper/Aluminum Elements Without Enclosures

Element	Fin Series Per Foot **Per Meter**	Tiers	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
						IBR Factor — Steam to Hot Water												
						1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
		1	8 ½	4.62	1110	1165	1055	955	865	765	680	590	500	445	365	290	220	165
			216	**50**	**1070**	**1120**	**10101**	**918**	**832**	**736**	**654**	**567**	**481**	**428**	**351**	**279**	**212**	**159**
		2*	14	8.33	2000	2100	1900	1720	1560	1380	1220	1060	900	800	660	520	400	300
			356	**90**	**1920**	**2020**	**1830**	**1650**	**1500**	**1330**	**1170**	**1020**	**865**	**769**	**635**	**500**	**385**	**288**
1″ CA	40	2**	18	8.70	2090	2195	1985	1800	1630	1440	1275	1105	940	835	690	545	420	315
25 mm	**131m**		**457**	**94**	**2010**	**2110**	**1910**	**1730**	**1570**	**1380**	**1230**	**1060**	**904**	**803**	**664**	**524**	**404**	**303**
Copper Tube		3**	27 ½	11.75	2820	2960	2680	2425	2200	1945	1720	1495	1270	1130	930	735	565	420
Alum. Fins			**699**	**126**	**2710**	**2850**	**2580**	**2330**	**2120**	**1870**	**1650**	**1440**	**1220**	**1090**	**894**	**707**	**543**	**404**
Fins 3 ¼″ x 3 ¼″		1†	—	3.93	945	990	900	810	735	650	575	500	425	380	310	245	190	140
83 x 83 mm				**42**	**909**	**952**	**865**	**779**	**707**	**625**	**553**	**481**	**409**	**365**	**298**	**236**	**183**	**135**
Thickness .0135″		1	8 ½	5.08	1220	1280	1160	1050	950	840	745	645	550	490	400	315	245	185
.34 mm			**216**	**55**	**1170**	**1230**	**1120**	**1010**	**914**	**808**	**716**	**620**	**529**	**471**	**385**	**303**	**236**	**178**
		2*	14	8.58	2060	2165	1955	1770	1605	1420	1255	1090	925	825	680	535	410	310
			356	**92**	**1980**	**2080**	**1880**	**1700**	**1540**	**1360**	**1210**	**1050**	**889**	**793**	**654**	**514**	**394**	**298**
	50	2**	18	9.25	2220	2330	2110	1910	1730	1530	1355	1175	1000	890	730	575	445	330
	164 m		**457**	**100**	**2140**	**2240**	**2030**	**1840**	**1660**	**1470**	**1300**	**1130**	**962**	**856**	**702**	**553**	**428**	**317**
		3**	27 ½	12.29	2950	3095	2800	2535	2300	2035	1800	1565	1325	1180	975	765	590	440
			699	**132**	**2840**	**2980**	**2690**	**2440**	**2210**	**1960**	**1730**	**1500**	**1270**	**1140**	**938**	**736**	**567**	**423**
		1†	—	4.33	1040	1090	990	895	810	715	635	550	470	415	340	270	210	155
				47	**1000**	**1050**	**952**	**861**	**779**	**688**	**611**	**529**	**452**	**399**	**327**	**260**	**202**	**149**
		1	8 ½	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
			216	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
		2*	14	8.75	2100	2205	1995	1805	1640	1450	1280	1115	945	840	695	545	420	315
			356	**94**	**2020**	**2120**	**1920**	**1740**	**1580**	**1390**	**1230**	**1070**	**909**	**808**	**668**	**524**	**404**	**303**
	58	2**	18	9.50	2280	2395	2165	1960	1780	1575	1390	1210	1025	910	750	590	455	340
	190 m		**457**	**102**	**2190**	**2300**	**2080**	**1880**	**1710**	**1520**	**1340**	**1160**	**986**	**875**	**721**	**567**	**438**	**327**
		3**	27 ½	12.54	3010	3160	2860	2590	2350	2075	1835	1595	1355	1205	995	780	600	450
			699	**135**	**2890**	**3040**	**2750**	**2490**	**2260**	**2000**	**1760**	**1530**	**1300**	**1160**	**957**	**750**	**577**	**433**
		1†	—	4.54	1090	1145	1035	935	850	750	665	575	490	435	360	285	220	160
				49	**1050**	**1100**	**995**	**899**	**817**	**721**	**639**	**553**	**471**	**418**	**346**	**274**	**212**	**154**

*5 ½″ (140 mm) Centers
**9 ½″ (241 mm) Centers
† At Ceiling
Dimensions in **bold** indicate metric units.

Performance Data

Table PD-2 — Ratings of Wall Fin Copper/Aluminum Elements Without Enclosures

Element	Fin Series Per Foot **Per Meter**	Tiers	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
						IBR Factor — Steam to Hot Water												
						1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
		1	8 ½	4.66	1120	1175	1065	965	875	770	685	595	505	450	370	290	225	170
			216	**50**	**1080**	**1130**	**1020**	**928**	**841**	**740**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
		2*	14	8.37	2010	2110	1910	1730	1565	1385	1225	1065	905	805	665	520	440	300
			356	**90**	**1930**	**2030**	**1840**	**1660**	**1500**	**1330**	**1180**	**1020**	**870**	**774**	**639**	**500**	**385**	**288**
1 ¼" CA	40	2**	18	8.75	2100	2205	1995	1805	1640	1450	1280	1115	945	840	695	545	420	315
32 mm	**131 m**		**457**	**94**	**2020**	**2120**	**1920**	**1740**	**1580**	**1390**	**1230**	**1070**	**909**	**808**	**668**	**524**	**404**	**303**
Copper Tube		3**	27 ½	11.75	2820	2960	2680	2425	2200	1945	1720	1495	1270	1130	930	735	565	425
Alum. Fins			**699**	**126**	**2710**	**2850**	**2580**	**2330**	**2120**	**1870**	**1650**	**1440**	**1220**	**1090**	**894**	**707**	**543**	**409**
Fins 3 ¼" x 3 ¼"		1†	—	3.95	950	1000	900	815	740	655	580	505	430	380	315	245	190	140
83 x 83 mm				**43**	**914**	**962**	**865**	**784**	**712**	**630**	**558**	**486**	**413**	**365**	**303**	**236**	**183**	**135**
Thickness .0135"		1	8 ½	5.08	1220	1280	1160	1050	950	840	745	650	550	490	400	315	245	185
.34 mm			**216**	**55**	**1170**	**1230**	**1120**	**1010**	**914**	**808**	**716**	**625**	**529**	**471**	**385**	**303**	**236**	**178**
		2*	14	8.50	2040	2140	1940	1755	1590	1405	1245	1080	920	815	675	530	410	305
			356	**91**	**1960**	**2060**	**1870**	**1690**	**1530**	**1350**	**1200**	**1040**	**885**	**784**	**649**	**510**	**394**	**293**
	50	2**	18	9.16	2200	2310	2090	1890	1715	1520	1340	1165	990	880	725	570	440	330
	164 m		**457**	**99**	**2120**	**2220**	**2010**	**1820**	**1650**	**1460**	**1290**	**1120**	**952**	**846**	**697**	**548**	**423**	**317**
		3**	27 ½	12.12	2910	3055	2765	2500	2270	2010	1775	1540	1310	1165	960	755	580	435
			699	**130**	**2800**	**2940**	**2660**	**2400**	**2180**	**1930**	**1710**	**1480**	**1260**	**1120**	**923**	**726**	**558**	**418**
		1†	—	4.33	1040	1090	990	895	810	720	635	550	470	415	345	270	210	155
				47	**1000**	**1050**	**950**	**860**	**780**	**690**	**610**	**530**	**450**	**400**	**330**	**260**	**200**	**150**
		1	8 ½	5.29	1270	1335	1205	1090	990	875	775	675	570	510	420	330	255	190
			216	**57**	**1220**	**1280**	**1160**	**1050**	**952**	**841**	**745**	**649**	**548**	**490**	**404**	**317**	**245**	**183**
	58	2*	14	8.58	2060	2165	1955	1770	1605	1420	1255	1090	925	825	680	535	410	310
	190 m		**356**	**92**	**1980**	**2080**	**1880**	**1700**	**1540**	**1360**	**1210**	**1050**	**889**	**793**	**654**	**514**	**394**	**298**
		2**	18	9.37	2250	2360	2140	1935	1755	1550	1370	1190	1010	900	740	585	450	335
			457	**101**	**2160**	**2270**	**2060**	**1860**	**1690**	**1490**	**1320**	**1140**	**971**	**865**	**712**	**563**	**433**	**322**
		3**	27 ½	12.33	2960	3105	2810	2545	2310	2040	1805	1570	1330	1185	975	770	590	445
			699	**133**	**2850**	**2990**	**2700**	**2450**	**2220**	**1960**	**1740**	**1510**	**1280**	**1140**	**938**	**740**	**567**	**428**
		1†	—	4.50	1080	1135	1025	930	840	745	660	570	485	430	355	280	215	160
				48	**1040**	**1090**	**986**	**894**	**808**	**716**	**635**	**548**	**466**	**413**	**341**	**269**	**207**	**154**

Performance Data

Table PD-2 — Ratings of Wall Fin Copper/Aluminum Elements Without Enclosures

Element	Fin Series Per Foot **Per Meter**	Tiers	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
						IBR Factor — Steam to Hot Water												
						1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
		1	8 ½	6.50	1560	1640	1480	1340	1215	1075	950	825	700	625	515	405	310	235
			216	**70**	**1500**	**1580**	**1420**	**1290**	**1170**	**1030**	**914**	**793**	**673**	**601**	**495**	**389**	**298**	**226**
		2*	14	11.66	2800	2940	2660	2410	2185	1930	1710	1485	1260	1120	925	730	560	420
			356	**126**	**2690**	**2830**	**2560**	**2320**	**2100**	**1860**	**1640**	**1430**	**1210**	**1080**	**889**	**702**	**538**	**404**
1 ¼" CA	40	2**	18	12.16	2920	3065	2775	2510	2275	2015	1780	1545	1315	1170	965	760	585	440
32 mm	**131 m**		**457**	**131**	**2810**	**2950**	**2670**	**2410**	**2190**	**1940**	**1710**	**1490**	**1260**	**1120**	**928**	**731**	**563**	**423**
Copper Tube		3**	27 ½	16.41	3940	4135	3745	3390	3075	2720	2405	2090	1775	1575	1300	1025	790	590
Alum. Fins			**699**	**177**	**3790**	**3980**	**3600**	**3260**	**2960**	**2620**	**2310**	**2010**	**1710**	**1520**	**1250**	**986**	**760**	**567**
Fins 3 ¼" x 5 ¼"		1†	—	5.52	1325	1390	1260	1140	1035	915	810	700	595	530	435	345	265	200
83 x 133 mm				**59**	**1270**	**1340**	**1210**	**1100**	**995**	**880**	**779**	**673**	**572**	**510**	**418**	**332**	**255**	**192**
Thickness .0135"		1	8 ½	7.33	1760	1850	1670	1515	1370	1215	1075	930	790	705	580	460	350	265
.34 mm			**216**	**79**	**1690**	**1780**	**1610**	**1460**	**1320**	**1170**	**1030**	**894**	**760**	**678**	**558**	**442**	**337**	**255**
		2*	14	12.08	2900	3045	2755	2495	2260	2000	1770	1535	1305	1160	955	755	580	435
			356	**130**	**2790**	**2930**	**2650**	**2400**	**2170**	**1920**	**1700**	**1480**	**1260**	**1120**	**918**	**726**	**558**	**418**
	50	2**	18	12.87	3090	3245	2935	2655	2410	2130	1885	1635	1390	1235	1020	805	620	465
	164 m		**457**	**139**	**2970**	**3120**	**2820**	**2550**	**2320**	**2050**	**1810**	**1570**	**1340**	**1190**	**981**	**774**	**596**	**447**
		3**	27 ½	16.87	4050	4250	3850	3485	3160	2795	2470	2145	1820	1620	1335	1055	810	610
			699	**182**	**3890**	**4090**	**3700**	**3350**	**3040**	**2690**	**2380**	**2060**	**1750**	**1560**	**1280**	**1010**	**779**	**587**
		1†	—	6.23	1495	1570	1420	1285	1165	1030	910	790	670	600	495	390	300	225
				67	**1440**	**1510**	**1360**	**1240**	**1120**	**990**	**875**	**760**	**644**	**577**	**476**	**375**	**288**	**216**
		1	8 ¼	7.75	1860	1955	1765	1600	1450	1285	1135	985	835	745	615	485	370	280
			210	**83**	**1790**	**1880**	**1700**	**1540**	**1390**	**1240**	**1090**	**947**	**803**	**716**	**591**	**466**	**356**	**269**
		2*	14	12.33	2960	3110	2810	2545	2310	2040	1805	1570	1330	1185	975	770	590	445
			356	**133**	**2850**	**2990**	**2700**	**2450**	**2220**	**1960**	**1740**	**1510**	**1280**	**1140**	**938**	**740**	**567**	**428**
	58	2**	18	13.20	3170	3330	3010	2725	2470	2185	1935	1680	1425	1270	1045	825	635	475
	190 m		**457**	**142**	**3050**	**3200**	**2890**	**2620**	**2380**	**2100**	**1860**	**1620**	**1370**	**1220**	**1000**	**793**	**611**	**457**
		3**	27 ½	17.12	4110	4315	3905	3535	3205	2835	2505	2180	1850	1645	1355	1070	820	615
			699	**184**	**3950**	**4150**	**3760**	**3400**	**3080**	**2730**	**2410**	**2100**	**1780**	**1580**	**1300**	**1030**	**789**	**591**
		1†	—	6.58	1580	1660	1500	1360	1230	1090	965	840	710	630	520	410	315	240
				71	**1520**	**1600**	**1440**	**1310**	**1180**	**1050**	**928**	**808**	**683**	**606**	**500**	**394**	**303**	**231**

*5 ½" (140 mm) Centers
**9 ½" (241 mm) Centers
† At Ceiling
Dimensions in **bold** indicate metric units.

Performance Data

Table PD-3 — Ratings of Wall Fin Steel Elements Without Enclosures

Element	Fin Series Per Foot **Per Meter**	Tiers	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
						IBR Factor — Steam to Hot Water												
		1	9	5.95	1430	1500	1360	1230	1120	990	870	760	640	570	470	370	285	215
1 ¼″ Steel			**229**	**64**	**1380**	**1440**	**1310**	**1180**	**1080**	**952**	**837**	**731**	**615**	**548**	**452**	**356**	**274**	**207**
32 mm		2*	13	8.60	2060	2160	1960	1770	1610	1420	1260	1090	925	825	680	535	410	310
Steel Tube			**330**	**93**	**1980**	**2080**	**1880**	**1700**	**1550**	**1360**	**1210**	**1050**	**889**	**793**	**654**	**514**	**394**	**298**
Steel Fins	52	2**	17	9.90	2370	2490	2250	2040	1850	1640	1450	1255	1065	945	780	615	475	355
Fins 2 ½″ x 5 ¼″	**171m**		**432**	**107**	**2280**	**2390**	**2160**	**1960**	**1780**	**1580**	**1390**	**1210**	**1020**	**909**	**750**	**591**	**457**	**341**
64 x 133 mm		3**	23	13.25	3180	3340	3020	2730	2480	2190	1940	1685	1430	1270	1050	825	635	475
Thickness .027″			**584**	**143**	**3060**	**3210**	**2900**	**2620**	**2380**	**2110**	**1870**	**1620**	**1380**	**1220**	**1010**	**793**	**611**	**457**
.69 mm		1†	—	5.00	1200	1260	1140	1030	940	830	730	635	540	480	395	310	240	180
				54	**1150**	**1210**	**1100**	**990**	**904**	**798**	**702**	**611**	**519**	**462**	**380**	**298**	**231**	**173**

*4″ (102 mm) Centers
** 8″ (203 mm) Centers
† At Ceiling
Dimensions in **bold** indicate metric units.

Metric Conversions

1 Psi = 6.895 kPa (Kilo Pascals) at 65°F Air = 18.3°C Air

Sq. Ft. EDR at 1 Psi (6.895 kPa) at 65°F Air (18.3°C) Air x 240 BTU = Total BTU's (Watts)

1 BTU/HR. = 0.2931 Watts

1 Foot = 0.3048 Meters - 1 Meter = 3.2808 Feet

1 BTU/HR/FT = 0.9616 Watts/Meter

10.7639 Sq. Feet = 1 Square Meter

1 Lbs = 0.4536 Kg (Kilograms)

1 Inch = 25.4 mm (Millimeters)

Note:
All shown capacities based on finned length at a water velocity of three feet per second or 0.9144 meter per second or greater.

Table PD-4 — Ratings 4″ (102 mm) Deep, Type S - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity **Btu/Hr./Ft. — At 65°F Air, Average Water Temperature** **Watts/Meter — At 18.3°C Air, Average Water Temperature** IBR Factor — Steam to Hot Water 220°F **104°C** 1.05	210°F **99°C** 0.95	200°F **93°C** 0.86	190°F **88°C** 0.78	180°F **82°C** 0.69	170°F **77°C** 0.61	160°F **71°C** 0.53	150°F **66°C** 0.45	140°F **60°C** 0.40	130°F **54°C** 0.33	120°F **49°C** 0.26	110°F **43°C** 0.20	100°F **38°C** 0.15
			10S	12 1/8	4.45	10.70	1125	1015	920	835	740	650	565	480	430	355	280	215	160
				308	**48**	**1030**	**1080**	**976**	**885**	**803**	**712**	**625**	**543**	**462**	**413**	**341**	**269**	**207**	**154**
			14S	16 1/8	4.62	1110	1165	1055	955	865	765	675	590	500	445	365	290	220	165
				410	**50**	**1070**	**1120**	**1010**	**918**	**832**	**736**	**649**	**567**	**481**	**428**	**351**	**279**	**212**	**159**
		1	18S	20 1/8	4.70	1130	1185	1075`	970	880	780	690	600	510	450	370	295	225	170
				511	**51**	**1090**	**1140**	**1030**	**933**	**846**	**750**	**664**	**577**	**490**	**433**	**356**	**284**	**216**	**163**
			24S	26 1/8	4.87	1170	1230	1110	1005	910	805	715	620	525	470	385	305	235	175
				664	**52**	**1120**	**1180**	**1070**	**966**	**875**	**774**	**688**	**596**	**505**	**452**	**370**	**293**	**226**	**168**
3/4″ CA	40	2*	14S	16 1/8	7.04	1690	1775	1605	1455	1320	1165	1030	895	760	675	555	440	340	255
19 mm	**131 m**			**410**	**76**	**1620**	**1710**	**1540**	**1400**	**1270**	**1120**	**990**	**861**	**731**	**649**	**534**	**423**	**327**	**245**
Copper Tube			18S	20 1/8	7.62	1830	1920	1740	1575	1425	1260	1115	970	825	730	605	475	365	275
Alum. Fins				**511**	**82**	**1760**	**1850**	**1670**	**1520**	**1370**	**1210**	**1070**	**933**	**793**	**702**	**582**	**457**	**351**	**264**
Fins 3 1/4″ x 3 1/4″		2**	24S	26 1/8	8.04	1930	2025	1835	1660	1505	1330	1175	1025	870	770	635	500	385	290
83 x 83 mm				**664**	**87**	**1860**	**1950**	**1760**	**1600**	**1450**	**1280**	**1130**	**986**	**837**	**740**	**611**	**481**	**370**	**279**
Thickness .0135″			10S	12 1/8	5.16	1240	1300	1180	1065	965	855	755	655	560	495	410	320	250	185
.34 mm				**308**	**56**	**1190**	**1250**	**1140**	**1020**	**928**	**822**	**726**	**630**	**538**	**476**	**394**	**308**	**240**	**178**
			14S	16 1/8	5.58	1340	1405	1275	1150	1045	925	815	710	605	535	440	350	270	200
				410	**60**	**1290**	**1350**	**1230**	**1110**	**1000**	**889**	**784**	**683**	**582**	**514**	**423**	**337**	**260**	**192**
		1	18S	20 1/8	5.95	1430	1500	1360	1230	1115	985	870	760	645	570	470	370	285	215
				511	**64**	**1380**	**1440**	**1310**	**1180**	**1070**	**947**	**837**	**731**	**620**	**548**	**452**	**356**	**274**	**207**
			24S	26 1/8	6.29	1510	1585	1435	1300	1180	1040	920	800	680	605	500	390	300	225
				664	**68**	**1450**	**1520**	**1380**	**1250**	**1140**	**1000**	**885**	**769**	**654**	**582**	**481**	**375**	**288**	**216**
	50	2*	14S	16 1/8	7.33	1760	1850	1670	1515	1370	1215	1075	930	790	705	580	460	350	265
	164 m			**410**	**79**	**1690**	**1780**	**1610**	**1460**	**1320**	**1170**	**1030**	**894**	**760**	**678**	**558**	**442**	**337**	**255**
			18S	20 1/8	8.33	2000	2100	1900	1720	1560	1380	1220	1060	900	800	660	520	400	300
				511	**90**	**1920**	**2020**	**1830**	**1650**	**1500**	**1330**	**1170**	**1020**	**865**	**769**	**635**	**500**	**385**	**288**
		2**	24S	26 1/8	8.95	2150	2260	2040	1850	1675	1485	1310	1140	965	860	710	560	430	320
				664	**96**	**2070**	**2170**	**1960**	**1780**	**1610**	**1430**	**1260**	**1100**	**928**	**827**	**683**	**538**	**413**	**308**
			10S	12 1/8	5.54	1330	1395	1265	1145	1035	920	810	705	600	530	440	345	265	200
				308	**60**	**1280**	**1340**	**1220**	**1100**	**995**	**885**	**779**	**678**	**577**	**510**	**423**	**332**	**255**	**192**
			14S	16 1/8	6.08	1460	1535	1385	1255	1140	1005	890	730	655	585	480	380	290	220
				410	**65**	**1400**	**1480**	**1330**	**1210**	**1100**	**966**	**856**	**702**	**630**	**563**	**462**	**365**	**279**	**212**
		1	18S	20 1/8	6.58	1580	1660	1500	1360	1230	1090	965	835	710	630	520	410	315	235
				511	**71**	**1520**	**1600**	**1440**	**1310**	**1180**	**1050**	**928**	**803**	**683**	**606**	**500**	**394**	**303**	**226**
			24S	26 1/8	7.08	1700	1785	1615	1460	1325	1175	1035	900	765	680	560	440	340	255
				664	**76**	**1640**	**1720**	**1550**	**1400**	**1270**	**1130**	**995**	**865**	**736**	**654**	**538**	**423**	**327**	**245**
	58	2*	14S	16 1/8	7.45	1790	1880	1700	1540	1395	1235	1090	950	805	715	590	465	360	270
	190 m			**410**	**80**	**1720**	**1810**	**1640**	**1480**	**1340**	**1190**	**1050**	**914**	**774**	**688**	**567**	**447**	**346**	**260**
			18S	20 1/8	8.70	2090	2195	1985	1795	1630	1440	1275	1105	904	835	690	545	420	315
				511	**94**	**2010**	**2110**	**1910**	**1730**	**1570**	**1380**	**1230**	**1060**	**869**	**803**	**664**	**524**	**404**	**303**
		2**	24S	26 1/8	9.58	2300	2415	2185	1980	1795	1585	1405	1220	1035	920	760	600	460	345
				664	**103**	**2210**	**2320**	**2100**	**1900**	**1730**	**1520**	**1350**	**1170**	**995**	**885**	**731**	**577**	**442**	**332**

*5 1/2″ (140 mm) Centers
**9 1/2″ (241 mm) Centers
24″ (610 mm) High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

Performance Data

Sloping Top

Table PD-5 — Ratings 4″ (102 mm) Deep, Type S - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**												
								220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
								IBR Factor — Steam to Hot Water												
								1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10S	12 1/8	4.50	1080		1135	1025	930	842	745	660	570	485	430	355	280	215	160
				308	**48**	**1040**		**1090**	**986**	**894**	**810**	**716**	**635**	**548**	**466**	**413**	**341**	**269**	**207**	**154**
			14S	16 1/8	4.66	1120		1175	1065	965	875	770	685	595	505	450	370	290	225	170
				410	**50**	**1080**		**1130**	**1020**	**928**	**841**	**740**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
		1	18S	20 1/8	4.79	1150		1210	1090	990	895	795	700	610	520	460	380	300	230	175
				511	**52**	**1110**		**1160**	**1050**	**952**	**861**	**764**	**673**	**587**	**500**	**442**	**365**	**288**	**221**	**168**
			24S	26 1/8	4.96	1190		1250	1130	1025	930	820	725	630	535	475	390	310	240	180
				664	**53**	**1140**		**1200**	**1090**	**986**	**894**	**789**	**697**	**606**	**514**	**457**	**375**	**298**	**231**	**173**
1″ CA	40	2*	14S	16 1/8	7.04	1690		1775	1605	1455	1320	1165	1030	895	760	675	560	440	340	255
25 mm	**131 m**			**410**	**76**	**1620**		**1710**	**1540**	**1400**	**1270**	**1120**	**990**	**861**	**731**	**649**	**538**	**423**	**327**	**245**
Copper Tube			18S	20 1/8	7.62	1830		1920	1740	1575	1425	1260	1115	970	825	730	605	475	365	275
Alum. Fins				**511**	**82**	**1760**		**1850**	**1670**	**1520**	**1370**	**1210**	**1070**	**933**	**793**	**702**	**582**	**457**	**351**	**264**
Fins 3 1/4″ x 3 1/4″		2**	24S	26 1/8	8.04	1930		2025	1835	1660	1505	1330	1175	1020	870	770	635	500	385	290
83 x 83 mm				**664**	**87**	**1860**		**1950**	**1760**	**1600**	**1450**	**1280**	**1130**	**981**	**837**	**740**	**611**	**481**	**370**	**279**
Thickness .0135″			10S	12 1/8	5.16	1240		1300	1180	1065	965	855	755	655	560	495	410	320	250	185
.34 mm				**308**	**56**	**1190**		**1250**	**1140**	**1020**	**928**	**822**	**726**	**630**	**538**	**476**	**394**	**308**	**240**	**178**
			14S	16 1/8	5.62	1350		1420	1280	1160	1055	930	825	715	610	540	445	350	270	200
				410	**60**	**1300**		**1360**	**1230**	**1120**	**1010**	**894**	**793**	**688**	**587**	**519**	**428**	**337**	**260**	**192**
		1	18S	20 1/8	6.00	1440		1510	1370	1240	1125	995	880	765	650	575	475	375	290	215
				511	**65**	**1380**		**1450**	**1320**	**1190**	**1080**	**957**	**846**	**736**	**625**	**553**	**457**	**361**	**279**	**207**
			24S	26 1/8	6.33	1520		1595	1445	1305	1185	1050	925	805	685	610	500	395	305	230
				664	**68**	**1460**		**1530**	**1390**	**1260**	**1140**	**1010**	**889**	**774**	**659**	**587**	**481**	**380**	**293**	**221**
	50	2*	14S	16 1/8	7.16	1720		1805	1635	1480	1340	1185	1050	910	775	690	570	445	345	260
	164 m			**410**	**77**	**1650**		**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**548**	**428**	**332**	**250**
			18S	20 1/8	8.16	1960		2060	1860	1685	1530	1350	1195	1040	880	785	645	510	390	295
				511	**88**	**1880**		**1980**	**1790**	**1620**	**1470**	**1300**	**1150**	**1000**	**846**	**755**	**620**	**490**	**375**	**284**
		2**	24S	26 1/8	8.77	2105		2210	2000	1810	1640	1450	1285	1115	945	840	695	545	420	315
				664	**94**	**2020**		**2120**	**1920**	**1740**	**1580**	**1390**	**1240**	**1070**	**909**	**808**	**668**	**524**	**404**	**303**
			10S	12 1/8	5.50	1320		1385	1255	1135	1030	910	805	700	595	530	435	345	265	200
				308	**59**	**1270**		**1330**	**1210**	**1090**	**990**	**875**	**774**	**673**	**572**	**510**	**418**	**332**	**255**	**192**
			14S	16 1/8	6.12	1470		1545	1395	1265	1145	1015	895	780	660	590	485	380	295	220
				410	**66**	**1410**		**1490**	**1340**	**1220**	**1100**	**976**	**861**	**750**	**635**	**567**	**466**	**365**	**284**	**212**
		1	18S	20 1/8	6.66	1600		1680	1520	1375	1250	1105	975	850	720	640	530	415	320	240
				511	**72**	**1540**		**1620**	**1460**	**1320**	**1200**	**1060**	**938**	**817**	**692**	**615**	**510**	**399**	**308**	**231**
			24S	26 1/8	7.16	1720		1805	1635	1480	1340	1185	1050	910	775	690	565	445	345	260
				664	**77**	**1650**		**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**543**	**428**	**332**	**250**
	58	2*	14S	16 1/8	7.21	1730		1815	1645	1490	1350	1195	1055	915	780	690	570	450	345	260
	190 m			**410**	**78**	**1660**		**1740**	**1580**	**1430**	**1300**	**1150**	**1010**	**880**	**750**	**664**	**548**	**433**	**332**	**250**
			18S	20 1/8	8.45	2030		2130	1930	1745	1585	1400	1240	1075	915	810	670	530	405	305
				511	**91**	**1950**		**2050**	**1860**	**1680**	**1520**	**1350**	**1190**	**1030**	**880**	**779**	**644**	**510**	**389**	**293**
		2**	24S	26 1/8	9.31	2235		2345	2125	1920	1745	1540	1365	1185	1005	895	740	580	445	335
				664	**100**	**2150**		**2260**	**2040**	**1850**	**1680**	**1480**	**1310**	**1140**	**966**	**861**	**712**	**558**	**428**	**322**

*5 1/2″ (140 mm) Centers
**9 1/2″ (241 mm) Centers
24″ (610 mm) High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Table PD-6 — Ratings 4″ (102 mm) Deep, Type S - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10S	12 1/8	4.54	1090	1145	1035	935	850	750	665	580	490	435	360	285	220	160
				308	**49**	**1050**	**1100**	**995**	**899**	**817**	**721**	**639**	**558**	**471**	**418**	**346**	**274**	**212**	**154**
			14S	16 1/8	4.75	1140	1195	1085	980	890	785	695	605	515	455	375	295	230	170
				410	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
		1	18S	20 1/8	4.87	1170	1230	1110	1005	910	805	715	620	525	470	385	305	235	175
				511	**52**	**1120**	**1180**	**1070**	**966**	**875**	**774**	**688**	**596**	**505**	**452**	**370**	**293**	**226**	**168**
			24S	26 1/8	5.04	1210	1270	1150	1040	945	835	740	640	545	485	400	315	240	180
				664	**54**	**1160**	**1220**	**1110**	**1000**	**909**	**803**	**712**	**615**	**524**	**466**	**385**	**303**	**231**	**173**
1 1/4″ CA	40	2*	14S	16 1/8	7.04	1690	1775	1605	1455	1320	1165	970	895	760	675	560	430	340	255
32 mm	**131 m**			**410**	**76**	**1620**	**1710**	**1540**	**1400**	**1270**	**1120**	**990**	**861**	**731**	**649**	**538**	**413**	**327**	**245**
Copper Tube			18S	20 1/8	7.58	1820	1910	1730	1565	1420	1255	1110	965	820	730	600	475	365	275
Alum. Fins				**511**	**82**	**1750**	**1840**	**1660**	**1500**	**1360**	**1210**	**1070**	**928**	**789**	**702**	**577**	**457**	**351**	**264**
Fins 3 1/4″ x 3 1/4″		2**	24S	26 1/8	8.00	1920	2015	1825	1650	1500	1325	1170	1020	865	770	635	500	385	290
83 x 83 mm				**664**	**86**	**1850**	**1940**	**1760**	**1590**	**1440**	**1270**	**1120**	**981**	**832**	**740**	**611**	**481**	**370**	**279**
Thickness .0135″			10S	12 1/8	5.12	1230	1290	1170	1060	960	850	750	650	555	490	405	320	245	185
.34 mm				**308**	**55**	**1180**	**1240**	**1120**	**1020**	**923**	**817**	**721**	**625**	**534**	**471**	**389**	**308**	**236**	**178**
			14S	16 1/8	5.66	1360	1430	1290	1170	1060	940	830	720	610	545	450	355	270	205
				410	**61**	**1310**	**1380**	**1240**	**1120**	**1020**	**904**	**798**	**692**	**587**	**524**	**433**	**341**	**260**	**197**
		1	18S	20 1/8	6.08	1460	1535	1385	1255	1140	1005	890	775	655	585	480	380	290	220
				511	**65**	**1400**	**1480**	**1330**	**1210**	**1100**	**966**	**856**	**745**	**630**	**563**	**462**	**365**	**279**	**212**
			24S	26 1/8	6.41	1540	1615	1465	1325	1200	1060	940	815	695	615	510	400	310	230
				664	**69**	**1480**	**1550**	**1410**	**1270**	**1150**	**1020**	**904**	**784**	**668**	**591**	**490**	**385**	**298**	**221**
	50	2*	14S	16 1/8	7.00	1680	1765	1595	1445	1310	1160	990	890	755	670	555	435	335	250
	164 m			**410**	**75**	**1620**	**1700**	**1530**	**1390**	**1260**	**1120**	**986**	**857**	**726**	**644**	**534**	**418**	**322**	**240**
			18S	20 1/8	8.00	1920	2015	1825	1650	1500	1325	1170	1020	865	770	635	500	385	290
				511	**86**	**1850**	**1940**	**1760**	**1590**	**1440**	**1270**	**1120**	**981**	**832**	**740**	**611**	**481**	**370**	**279**
		2**	24S	26 1/8	8.60	2065	2170	1960	1775	1610	1425	1260	1095	930	825	680	535	415	310
				664	**93**	**1990**	**2090**	**1880**	**1710**	**1550**	**1370**	**1210**	**1050**	**894**	**793**	**654**	**514**	**399**	**298**
			10S	12 1/8	5.45	1310	1375	1245	1125	1020	905	800	695	590	525	430	340	260	195
				308	**59**	**1260**	**1320**	**1200**	**1080**	**981**	**870**	**769**	**668**	**567**	**505**	**413**	**327**	**250**	**188**
			14S	16 1/8	6.12	1470	1545	1395	1265	1145	1015	895	780	660	590	485	380	295	220
				410	**66**	**1410**	**1490**	**1340**	**1220**	**1100**	**976**	**861**	**750**	**635**	**567**	**466**	**365**	**284**	**212**
		1	18S	20 1/8	6.75	1620	1700	1540	1395	1265	1120	990	860	730	650	535	420	325	240
				511	**73**	**1560**	**1640**	**1480**	**1340**	**1220**	**1080**	**952**	**827**	**702**	**625**	**514**	**404**	**313**	**231**
			24S	26 1/8	7.25	1740	1825	1655	1495	1355	1200	1060	920	780	695	575	450	350	260
				664	**78**	**1670**	**1760**	**1590**	**1440**	**1300**	**1150**	**1020**	**885**	**750**	**668**	**553**	**433**	**337**	**250**
	58	2*	14S	16 1/8	7.00	1680	1765	1595	1445	1310	1160	995	890	755	670	555	435	335	250
	190 mm			**410**	**75**	**1620**	**1700**	**1530**	**1390**	**1260**	**1120**	**986**	**856**	**726**	**644**	**534**	**418**	**322**	**240**
			18S	20 1/8	8.16	1960	2060	1860	1685	1530	1350	1195	1040	880	785	645	510	390	295
				511	**88**	**1880**	**1980**	**1790**	**1620**	**1470**	**1300**	**1150**	**1000**	**846**	**755**	**620**	**490**	**375**	**284**
		2**	24S	26 1/8	8.98	2155	2260	2045	1855	1680	1485	1315	1140	970	860	710	560	430	325
				664	**97**	**2070**	**2170**	**1970**	**1780**	**1620**	**1430**	**1260**	**1100**	**933**	**827**	**683**	**538**	**413**	**313**

*5 1/2″ (140 mm) Centers
**9 1/2″ (241 mm) Centers
24″ (610 mm) High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Sloping Top

Table PD-7 — Ratings 6" (152 mm) Deep, Type S - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12S	13 1/4	6.58	1580	1660	1500	11360	1230	1090	965	835	710	630	520	410	315	235
				337	**71**	**1520**	**1600**	**1440**	**1310**	**1180**	**1050**	**928**	**803**	**683**	**606**	**500**	**394**	**303**	**226**
			16S	17 1/4	6.79	1630	1710	1550	1400	1270	1125	995	865	735	650	535	425	325	245
				438	**73**	**1570**	**1640**	**1490**	**1350**	**1220**	**1080**	**957**	**832**	**707**	**625**	**514**	**409**	**313**	**236**
		1	20S	21 1/4	6.91	1660	1745	1575	1430	1295	1145	1010	880	745	665	550	430	330	250
				540	**74**	**1600**	**1680**	**1520**	**1380**	**1240**	**1100**	**971**	**846**	**716**	**639**	**529**	**413**	**317**	**240**
			24S	25 1/4	7.16	1720	1805	1635	1480	1340	1185	1050	910	775	690	570	445	345	260
				641	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**548**	**428**	**332**	**250**
1 1/4" CA	40	2*	16S	17 1/4	10.70	2570	2695	2440	2210	2005	1775	1570	1360	1155	1030	850	670	515	385
32 mm	**131 m**			**438**	**115**	**2470**	**2590**	**2350**	**2120**	**1930**	**1710**	**1510**	**1310**	**1110**	**990**	**817**	**644**	**495**	**370**
Copper Tube			20S	21 1/4	11.25	2700	2835	2565	2320	2105	1865	1645	1430	1215	1080	890	700	540	405
Alum. Fins				**540**	**121**	**2600**	**2730**	**2470**	**2230**	**2020**	**1790**	**1580**	**1380**	**1170**	**1040**	**856**	**673**	**519**	**389**
Fins 3 1/4" x 5 1/4"		2**	24S	25 1/4	11.87	2850	2990	2710	2450	2220	1965	1740	1510	1280	1140	940	740	570	425
83 x 133 mm				**641**	**128**	**2740**	**2880**	**2610**	**2360**	**2140**	**1890**	**1670**	**1450**	**1230**	**1100**	**904**	**712**	**548**	**409**
Thickness .0135"			12S	13 1/4	7.83	1880	1975	1785	1615	1465	1300	1145	995	845	750	620	490	375	280
.34 mm				**337**	**84**	**1810**	**1900**	**1720**	**1550**	**1410**	**1250**	**1100**	**957**	**813**	**721**	**596**	**471**	**361**	**269**
			16S	17 1/4	8.50	2040	2140	1940	1755	1590	1410	1245	1080	920	815	675	530	410	305
				438	**91**	**1960**	**2060**	**1870**	**1690**	**1530**	**1360**	**1200**	**1040**	**885**	**784**	**649**	**510**	**394**	**293**
		1	20S	21 1/4	9.04	2170	2280	2060	1865	1690	1495	1325	1150	975	870	715	565	435	325
				540	**97**	**2090**	**2190**	**1980**	**1790**	**1620**	**1440**	**1270**	**1110**	**938**	**837**	**688**	**543**	**418**	**313**
			24S	25 1/4	9.54	2290	2405	2175	1970	1785	1580	1395	1215	1030	915	755	595	460	345
				641	**103**	**2200**	**2310**	**2090**	**1890**	**1720**	**1520**	**1340**	**1170**	**990**	**880**	**726**	**572**	**442**	**332**
	50	2*	16S	17 1/4	11.08	2660	2795	2525	2290	2075	1835	1620	1410	1195	1065	880	690	530	400
	164 m			**438**	**119**	**2560**	**2690**	**2430**	**2200**	**2000**	**1760**	**1560**	**1360**	**1150**	**1020**	**846**	**664**	**510**	**385**
			20S	21 1/4	12.33	2960	3110	2810	2545	2310	2040	1805	1570	1330	1185	975	770	590	445
				540	**133**	**2850**	**2990**	**2700**	**2450**	**2220**	**1960**	**1740**	**1510**	**1280**	**1140**	**938**	**740**	**567**	**428**
		2**	24S	25 1/4	13.25	3180	3340	3020	2735	2480	2195	1940	1685	1430	1270	1050	825	635	475
				641	**143**	**3060**	**3210**	**2900**	**2630**	**2380**	**2110**	**1870**	**1620**	**1380**	**1220**	**1010**	**793**	**611**	**457**
			12S	13 1/4	8.50	2040	2140	1940	1755	1590	1410	1245	1080	920	815	675	530	410	305
				337	**91**	**1960**	**2060**	**1870**	**1690**	**1530**	**1360**	**1200**	**1040**	**885**	**784**	**649**	**510**	**394**	**293**
			16S	17 1/4	9.41	2260	2375	2145	1945	1765	1560	1380	1200	1015	905	745	590	450	340
				438	**101**	**2170**	**2280**	**2060**	**1870**	**1700**	**1500**	**1330**	**1150**	**976**	**870**	**716**	**567**	**433**	**327**
		1	20S	21 1/4	10.12	2430	2550	2310	2090	1895	1675	1480	1285	1095	970	800	630	485	365
				540	**109**	**2340**	**2450**	**2220**	**2010**	**1820**	**1610**	**1420**	**1240**	**1050**	**933**	**769**	**606**	**466**	**351**
			24S	25 1/4	10.87	2610	2740	2480	2245	2035	1800	1590	1385	1175	1045	860	680	520	390
				641	**117**	**2510**	**2640**	**2380**	**2160**	**1960**	**1730**	**1530**	**1330**	**1130**	**1000**	**827**	**654**	**500**	**375**
	58	2*	16S	17 1/4	11.29	2710	2845	2575	2330	2115	1870	1655	1435	1220	1085	895	705	540	405
	190 m			**438**	**122**	**2610**	**2740**	**2480**	**2240**	**2030**	**1800**	**1590**	**1380**	**1170**	**1040**	**861**	**678**	**519**	**389**
			20S	21 1/4	12.91	3100	3255	2945	2665	2420	2140	1890	1645	1395	1240	1025	805	620	465
				540	**139**	**2980**	**3130**	**2830**	**2560**	**2330**	**2060**	**1820**	**1580**	**1340**	**1190**	**986**	**774**	**596**	**447**
		2**	24S	25 1/4	14.20	3410	3580	3240	2930	2660	2350	2080	1805	1535	1365	1125	885	680	510
				641	**153**	**3280**	**3440**	**3120**	**2820**	**2560**	**2260**	**2000**	**1740**	**1480**	**1310**	**1080**	**851**	**654**	**490**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
24S High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Table PD-8 — Ratings 6″ (152 mm) Deep, Type S - Enclosure With Steel Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12S	13 7/32	6.40	1530	1610	1450	1320	1190	1060	930	810	685	610	505	395	305	230
				336	**69**	**1470**	**1550**	**1390**	**1270**	**1140**	**1020**	**894**	**779**	**659**	**587**	**486**	**380**	**293**	**221**
			16S	17 7/32	6.90	1650	1730	1570	1420	1290	1140	1010	875	740	660	545	430	330	245
				437	**74**	**1590**	**1660**	**1510**	**1360**	**1240**	**1100**	**971**	**841**	**712**	**635**	**524**	**413**	**317**	**236**
1 1/4″ Steel		1	20S	21 7/32	7.25	1740	1830	1650	1500	1360	1200	1060	920	780	695	575	450	345	260
32 mm				**539**	**78**	**1670**	**1760**	**1590**	**1440**	**1310**	**1150**	**1020**	**885**	**750**	**668**	**553**	**433**	**332**	**250**
Steel Tube			24S	25 7/32	7.62	1830	1920	1740	1575	1430	1265	1115	970	825	730	605	475	365	275
Steel Fins				**640**	**82**	**1760**	**1850**	**1670**	**1520**	**1380**	**1220**	**1070**	**933**	**793**	**702**	**582**	**457**	**351**	**264**
Fins 2 1/2″ x 5 1/4″	52		16S	17 7/32	9.15	2200	2310	2090	1890	1720	1520	1340	1165	990	880	725	570	440	330
64 x 133 mm	**171 m**			**437**	**98**	**2120**	**2220**	**2010**	**1820**	**1650**	**1460**	**1290**	**1120**	**952**	**846**	**697**	**548**	**423**	**317**
Thickness .027″		2*	20S	21 7/32	9.90	2380	2500	2260	2050	1860	1640	1450	1260	1070	950	785	620	475	355
.69 mm				**539**	**107**	**2290**	**2400**	**2170**	**1970**	**1790**	**1580**	**1390**	**1210**	**1030**	**914**	**755**	**596**	**457**	**341**
			24S	25 7/32	10.41	2500	2625	2375	2150	1950	1725	1525	1325	1125	1000	825	650	500	375
				640	**112**	**2400**	**2520**	**2280**	**2070**	**1880**	**1660**	**1470**	**1270**	**1080**	**962**	**793**	**625**	**481**	**361**
			20S	21 7/32	10.25	2460	2580	2340	2120	1920	1700	1500	1305	1105	985	810	640	490	365
				539	**110**	**2370**	**2480**	**2250**	**2040**	**1850**	**1640**	**1400**	**1260**	**1060**	**947**	**779**	**615**	**471**	**351**
		2**	24S	25 7/32	10.78	2590	2720	2460	2225	2020	1785	1580	1375	1165	1035	855	675	520	390
				640	**116**	**2490**	**2620**	**2370**	**2140**	**1940**	**1720**	**1520**	**1320**	**1120**	**995**	**822**	**649**	**500**	**375**

*4″ (102 mm) Centers
**8″ (203 mm) Centers
24S High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Front Outlet

Table PD-9 — Ratings 4" (102 mm) Deep, Type F - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPA at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** IBR Factor — Steam to Hot Water												
							220°F **104°C** 1.05	210°F **99°C** 0.95	200°F **93°C** 0.86	190°F **88°C** 0.78	180°F **82°C** 0.69	170°F **77°C** 0.61	160°F **71°C** 0.53	150°F **66°C** 0.45	140°F **60°C** 0.40	130°F **54°C** 0.33	120°F **49°C** 0.26	110°F **43°C** 0.20	100°F **38°C** 0.15
			10F	12 3/4	4.50	1080	1135	1025	930	840	745	660	570	485	430	355	280	215	160
				324	**48**	**1040**	**1090**	**986**	**894**	**808**	**716**	**635**	**548**	**466**	**413**	**341**	**269**	**207**	**154**
			14F	16 3/4	4.75	1140	1195	1085	980	890	785	695	605	515	455	375	295	230	170
				425	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
		1	18F	20 3/4	4.87	1170	1230	1110	1005	910	805	715	620	525	470	385	305	235	175
				527	**52**	**1120**	**1180**	**1070**	**966**	**875**	**774**	**688**	**596**	**505**	**452**	**370**	**293**	**226**	**168**
			24F	26 3/4	5.04	1210	1270	1150	1040	945	835	740	640	545	485	400	315	240	180
				679	**54**	**1160**	**1220**	**1110**	**1000**	**909**	**803**	**712**	**615**	**524**	**466**	**385**	**303**	**231**	**173**
3/4" CA	40	2*	14F	16 3/4	7.23	1735	1820	1650	1490	1355	1195	1060	920	780	695	570	450	345	260
19 mm	**131 m**			**425**	**78**	**1670**	**1750**	**1590**	**1430**	**1300**	**1150**	**1020**	**885**	**750**	**668**	**548**	**433**	**332**	**250**
Copper Tube			18F	20 3/4	7.89	1895	1990	1800	1630	1480	1305	1155	1005	850	760	625	490	380	285
Alum. Fins				**527**	**85**	**1820**	**1910**	**1730**	**1570**	**1420**	**1260**	**1110**	**966**	**817**	**731**	**601**	**471**	**365**	**274**
Fins 3 1/4" x 3 1/4"		2**	24F	26 3/4	8.31	1995	2095	1895	1715	1555	1375	1215	1055	895	800	660	520	400	300
83 x 83 mm				**679**	**89**	**1920**	**2020**	**1820**	**1650**	**1500**	**1320**	**1170**	**1010**	**861**	**769**	**635**	**500**	**385**	**288**
Thickness .0135"			10F	12 3/4	5.04	1210	1270	1150	1040	945	835	740	640	545	485	400	315	240	180
.34 mm				**324**	**54**	**1160**	**1220**	**1110**	**1000**	**909**	**803**	**712**	**615**	**524**	**466**	**385**	**303**	**231**	**173**
			14F	16 3/4	5.62	1350	1415	1280	1160	1055	930	825	715	605	540	445	350	270	200
				425	**60**	**1300**	**1360**	**1230**	**1120**	**1010**	**894**	**793**	**688**	**582**	**519**	**428**	**337**	**260**	**192**
		1	18F	20 3/4	6.04	1450	1520	1375	1245	1130	1000	885	770	650	580	480	375	290	215
				527	**65**	**1390**	**1460**	**1320**	**1200**	**1090**	**962**	**851**	**740**	**625**	**558**	**462**	**361**	**279**	**207**
			24F	26 3/4	6.37	1530	1605	1455	1315	1195	1055	935	810	690	610	505	400	305	230
				679	**69**	**1470**	**1540**	**1400**	**1260**	**1150**	**1010**	**899**	**779**	**664**	**587**	**486**	**385**	**293**	**221**
	50	2*	14F	16 3/4	7.37	1770	1860	1680	1520	1380	1220	1080	940	795	710	585	460	355	265
	164 m			**425**	**79**	**1700**	**1790**	**1620**	**1460**	**1330**	**1170**	**1040**	**904**	**764**	**683**	**563**	**442**	**341**	**255**
			18F	20 3/4	8.45	2030	2130	1930	1745	1585	1400	1240	1075	915	810	670	525	405	305
				527	**91**	**1950**	**2050**	**1860**	**1680**	**1520**	**1350**	**1190**	**1030**	**880**	**779**	**644**	**505**	**389**	**293**
		2**	24F	26 3/4	8.91	2140	2245	2035	1840	1670	1475	1305	1135	965	855	705	555	430	320
				679	**96**	**2060**	**2160**	**1960**	**1770**	**1610**	**1420**	**1260**	**1090**	**928**	**822**	**678**	**534**	**413**	**308**
			10F	12 3/4	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
				324	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
			14F	16 3/4	6.08	1460	1535	1385	1255	1140	1005	890	775	655	585	480	380	290	220
				425	**65**	**1400**	**1480**	**1330**	**1210**	**1100**	**966**	**856**	**745**	**630**	**563**	**462**	**365**	**279**	**212**
		1	18F	20 3/4	6.50	1560	1640	1480	1340	1215	1075	950	825	700	625	515	405	310	235
				527	**70**	**1500**	**1580**	**1420**	**1290**	**1170**	**1030**	**914**	**793**	**673**	**601**	**495**	**389**	**298**	**226**
			24F	26 3/4	6.98	1675	1760	1590	1440	1305	1155	1020	885	755	670	550	435	335	250
				679	**75**	**1610**	**1690**	**1530**	**1380**	**1260**	**1110**	**981**	**851**	**726**	**644**	**529**	**418**	**322**	**240**
	58	2*	14F	16 3/4	7.45	1790	1880	1700	1540	1395	1235	1090	950	805	715	590	465	360	270
	190 m			**425**	**80**	**1720**	**1810**	**1640**	**1480**	**1340**	**1190**	**1050**	**914**	**774**	**688**	**567**	**447**	**346**	**260**
			18F	20 3/4	8.60	2065	2170	1960	1775	1610	1425	1260	1095	930	825	680	535	415	310
				527	**93**	**1990**	**2090**	**1880**	**1710**	**1550**	**1370**	**1210**	**1050**	**894**	**793**	**654**	**514**	**399**	**298**
		2**	24F	26 3/4	9.23	2215	2325	2105	1905	1725	1530	1350	1175	995	885	730	575	445	330
				679	**99**	**2130**	**2240**	**2020**	**1830**	**1660**	**1470**	**1300**	**1130**	**957**	**851**	**702**	**553**	**428**	**317**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24F high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

Table PD-10 — Ratings 4" (102 mm) Deep, Type F - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10F	12 3/4	4.54	1090	1145	1035	935	850	750	665	575	490	435	360	285	220	160
				324	**49**	**1050**	**1100**	**995**	**899**	**817**	**721**	**639**	**553**	**471**	**418**	**346**	**274**	**212**	**154**
			14F	16 3/4	4.79	1150	1210	1090	990	895	795	700	610	520	460	380	300	230	170
				425	**52**	**1110**	**1160**	**1050**	**952**	**861**	**764**	**673**	**587**	**500**	**442**	**365**	**288**	**221**	**163**
		1	18F	20 3/4	4.95	1190	1250	1130	1025	930	820	725	630	535	475	390	310	240	180
				527	**53**	**1140**	**1200**	**1090**	**986**	**894**	**789**	**697**	**606**	**514**	**457**	**375**	**298**	**231**	**173**
			24F	26 3/4	5.13	1230	1290	1170	1060	960	850	750	650	555	490	405	320	245	185
				679	**55**	**1180**	**1240**	**1120**	**1020**	**923**	**817**	**721**	**625**	**534**	**471**	**389**	**308**	**236**	**178**
1" CA	40	2*	14F	16 3/4	7.23	1735	1820	1650	1490	1355	1195	1060	920	780	695	570	450	345	260
25 mm	**131 m**			**425**	**78**	**1670**	**1750**	**1590**	**1430**	**1300**	**1150**	**1020**	**885**	**750**	**668**	**548**	**433**	**332**	**250**
Copper Tube			18F	20 3/4	7.89	1895	1990	1800	1630	1480	1310	1155	1005	850	760	625	490	380	285
Alum. Fins				**527**	**85**	**1820**	**1910**	**1730**	**1570**	**1420**	**1260**	**1110**	**966**	**817**	**731**	**601**	**471**	**365**	**274**
Fins 3 1/4" x 3 1/4"		2**	24F	26 3/4	8.14	1955	2050	1855	1680	1525	1350	1190	1035	880	780	645	510	390	295
83 x 83 mm				**679**	**88**	**1880**	**1970**	**1780**	**1620**	**1470**	**1300**	**1140**	**995**	**846**	**750**	**620**	**490**	**375**	**284**
Thickness .0135"			10F	12 3/4	5.00	1200	1260	1140	1030	935	830	730	635	540	480	395	310	240	180
.34 mm				**324**	**54**	**1150**	**1210**	**1100**	**990**	**899**	**798**	**702**	**611**	**519**	**462**	**380**	**298**	**231**	**173**
			14F	16 3/4	5.62	1350	1420	1280	1160	1055	930	825	715	610	540	445	350	270	200
				425	**60**	**1300**	**1360**	**1230**	**1120**	**1010**	**894**	**793**	**688**	**587**	**519**	**428**	**337**	**260**	**192**
		1	18F	20 3/4	6.08	1460	1535	1385	1255	1140	1005	890	775	655	585	480	380	290	220
				527	**65**	**1400**	**1480**	**1330**	**1210**	**1100**	**966**	**856**	**745**	**630**	**563**	**462**	**365**	**279**	**212**
			24F	26 3/4	6.41	1540	1615	1465	1325	1200	1060	940	815	695	615	510	400	310	230
				679	**69**	**1480**	**1550**	**1410**	**1270**	**1150**	**1020**	**904**	**784**	**668**	**591**	**490**	**385**	**298**	**221**
	50	2*	14F	16 3/4	7.16	1720	1805	1635	1480	1340	1185	1059	910	775	690	565	445	345	260
	164 m			**425**	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**543**	**428**	**332**	**250**
			18F	20 3/4	8.29	1990	2090	1890	1710	1550	1375	1215	1055	895	795	655	515	400	300
				527	**89**	**1910**	**2010**	**1820**	**1640**	**1490**	**1320**	**1170**	**1010**	**861**	**764**	**630**	**495**	**385**	**288**
		2**	24F	26 3/4	8.75	2095	2200	1990	1800	1635	1445	1280	1110	940	840	690	545	420	315
				679	**94**	**2020**	**2120**	**1910**	**1730**	**1570**	**1390**	**1230**	**1070**	**904**	**808**	**664**	**524**	**404**	**303**
			10F	12 3/4	5.25	1260	1325	1195	1085	980	870	770	665	565	505	415	330	250	190
				324	**57**	**1210**	**1270**	**1150**	**1040**	**942**	**837**	**740**	**639**	**543**	**486**	**399**	**317**	**240**	**183**
			14F	16 3/4	6.04	1450	1520	1380	1245	1130	1000	885	770	650	580	480	375	290	215
				425	**65**	**1390**	**1460**	**1330**	**1200**	**1090**	**962**	**851**	**740**	**625**	**558**	**462**	**361**	**279**	**207**
		1	18F	20 3/4	6.66	1600	1680	1520	1375	1250	1105	975	850	720	640	530	415	320	240
				527	**72**	**1540**	**1620**	**1460**	**1320**	**1200**	**1060**	**938**	**817**	**692**	**615**	**510**	**399**	**308**	**231**
			24F	26 3/4	7.16	1720	1805	1635	1480	1340	1185	1050	910	775	690	570	445	345	260
				679	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**548**	**428**	**332**	**250**
	58	2*	14F	16 3/4	7.10	1705	1790	1620	1465	1330	1175	1040	905	765	680	560	440	340	255
	190 m			**425**	**76**	**1640**	**1720**	**1560**	**1410**	**1280**	**1130**	**1000**	**870**	**736**	**654**	**538**	**423**	**327**	**245**
			18F	20 3/4	8.46	2030	2130	1930	1745	1585	1400	1240	1075	915	810	670	530	405	305
				527	**91**	**1950**	**2050**	**1860**	**1680**	**1520**	**1350**	**1190**	**1030**	**880**	**779**	**644**	**510**	**389**	**293**
		2**	24F	26 3/4	9.08	2180	2290	2070	1875	1700	1505	1330	1155	980	870	720	565	435	325
				679	**98**	**2100**	**2200**	**1990**	**1800**	**1640**	**1450**	**1280**	**1110**	**942**	**837**	**692**	**543**	**418**	**313**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24F high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Front Outlet

Table PD-11 — Ratings 4" (102 mm) Deep, Type F - Enclosure With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.85 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10F	12 3/4	4.58	1100	1155	1045	945	860	760	670	585	495	440	365	285	220	165
				324	**49**	**1060**	**1110**	**1000**	**909**	**827**	**731**	**644**	**563**	**476**	**423**	**351**	**274**	**212**	**159**
			14F	16 3/4	4.83	1160	1220	1100	1000	905	800	710	615	520	465	380	300	230	175
				425	**52**	**1120**	**1170**	**1060**	**962**	**870**	**769**	**683**	**591**	**500**	**447**	**365**	**288**	**221**	**168**
		1	18F	20 3/4	5.00	1200	1260	1140	1030	935	830	730	635	540	480	395	310	240	180
				527	**54**	**1150**	**1210**	**1100**	**990**	**899**	**798**	**702**	**611**	**519**	**462**	**380**	**298**	**231**	**173**
			24F	26 3/4	5.17	1240	1300	1180	1065	965	855	755	655	560	495	410	320	250	185
				679	**56**	**1190**	**1250**	**1140**	**1020**	**928**	**822**	**726**	**630**	**538**	**476**	**394**	**308**	**240**	**178**
1 1/4" CA	40	*	14F	16 3/4	7.16	1720	1805	1635	1480	1340	1185	1050	910	775	690	565	445	345	260
32 mm	**131 m**			**425**	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**543**	**428**	**332**	**250**
Copper Tube			18F	20 3/4	7.77	1865	1960	1770	1605	1455	1285	1140	990	840	745	615	485	375	280
Alum. Fins				**527**	**84**	**1790**	**1880**	**1700**	**1540**	**1400**	**1240**	**1100**	**952**	**808**	**716**	**591**	**466**	**361**	**269**
Fins 3 1/4" x 3 1/4"		2**	24F	26 3/4	8.04	1930	2025	1835	1660	1505	1330	1175	1020	870	770	635	500	385	290
83 x 83 mm				**679**	**87**	**1860**	**1950**	**1760**	**1600**	**1450**	**1280**	**1130**	**981**	**837**	**740**	**611**	**481**	**370**	**279**
Thickness .0135"			10F	12 3/4	4.95	1190	1250	1130	1025	930	820	725	630	535	475	390	310	240	180
.34 mm				**324**	**53**	**1140**	**1200**	**1090**	**986**	**894**	**789**	**697**	**606**	**514**	**457**	**375**	**298**	**231**	**173**
			14F	16 3/4	5.62	1350	1420	1280	1160	1055	930	825	715	610	540	445	350	270	200
				425	**60**	**1300**	**1360**	**1230**	**1120**	**1010**	**894**	**793**	**688**	**587**	**519**	**428**	**337**	**260**	**192**
		1	18F	20 3/4	6.12	1470	1545	1395	1265	1145	1015	895	780	660	590	485	380	295	220
				527	**66**	**1410**	**1490**	**1340**	**1220**	**1100**	**976**	**861**	**750**	**635**	**567**	**466**	**365**	**284**	**212**
			24F	26 3/4	6.46	1550	1630	1470	1335	1210	1070	945	820	700	620	510	405	310	230
				679	**70**	**1490**	**1570**	**1410**	**1280**	**1160**	**1030**	**909**	**789**	**673**	**596**	**490**	**389**	**298**	**221**
	50	2*	14F	16 3/4	6.95	1670	1755	1585	1435	1300	1150	1020	885	750	670	550	435	335	250
	164 m			**425**	**75**	**1610**	**1690**	**1520**	**1380**	**1250**	**1110**	**981**	**851**	**721**	**644**	**529**	**418**	**322**	**240**
			18F	20 3/4	8.06	1935	2030	1840	1665	1510	1335	1180	1025	870	775	640	505	385	290
				527	**87**	**1860**	**1950**	**1770**	**1600**	**1450**	**1280**	**1140**	**986**	**837**	**745**	**615**	**486**	**370**	**279**
		2**	24F	26 3/4	8.50	2049	2140	1940	1755	1590	1410	1245	1080	920	815	675	530	410	305
				679	**91**	**1960**	**2060**	**1870**	**1690**	**1530**	**1360**	**1200**	**1040**	**885**	**784**	**649**	**510**	**394**	**293**
			10F	12 3/4	5.20	1250	1310	1190	1075	975	860	760	660	560	500	410	325	250	185
				324	**56**	**1200**	**1260**	**1140**	**1030**	**938**	**827**	**731**	**635**	**538**	**481**	**394**	**313**	**240**	**178**
			14F	16 3/4	6.04	1450	1520	1380	1245	1130	1000	885	770	650	580	480	375	290	215
				425	**65**	**1390**	**1460**	**1330**	**1200**	**1090**	**962**	**851**	**740**	**625**	**558**	**462**	**361**	**279**	**207**
		1	18F	20 3/4	6.70	1610	1690	1530	1385	1255	1110	980	855	725	645	530	420	320	240
				527	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**822**	**697**	**620**	**510**	**404**	**308**	**231**
			24F	26 3/4	7.21	1730	1815	1645	1490	1350	1195	1055	915	780	690	570	450	345	260
				679	**78**	**1660**	**1740**	**1580**	**1430**	**1300**	**1150**	**1010**	**880**	**750**	**664**	**548**	**433**	**332**	**250**
	58	2*	14F	16 3/4	6.91	1660	1745	1575	1430	1295	1145	1010	880	745	665	550	430	330	250
	190 m			**425**	**74**	**1600**	**1680**	**1520**	**1380**	**1240**	**1100**	**971**	**846**	**716**	**639**	**529**	**413**	**317**	**240**
			18F	20 3/4	8.12	1950	2050	1850	1675	1520	1345	1190	1035	880	780	645	505	390	290
				527	**87**	**1880**	**1970**	**1780**	**1610**	**1460**	**1290**	**1140**	**995**	**846**	**750**	**620**	**486**	**375**	**279**
		2**	24F	26 3/4	8.75	2095	2200	1990	1800	1635	1445	1280	1110	940	840	690	545	420	315
				679	**94**	**2020**	**2120**	**1910**	**1730**	**1570**	**1390**	**1230**	**1070**	**904**	**808**	**664**	**524**	**404**	**303**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24F high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Table PD-12 — Ratings 6" (152 mm) Deep, Type F - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12F	14 13/16	6.50	1560	1640	1480	1340	1215	1075	950	825	700	625	515	405	310	235
				376	**70**	**1500**	**1580**	**1420**	**1290**	**1170**	**1030**	**914**	**793**	**673**	**601**	**495**	**389**	**298**	**226**
			16F	18 13/16	6.75	1620	1700	1540	1395	1265	1115	990	860	730	650	535	420	325	240
				478	**73**	**1560**	**1640**	**1480**	**1340**	**1220**	**1070**	**952**	**827**	**702**	**625**	**514**	**404**	**313**	**231**
		1	20F	22 13/16	6.75	1620	1700	1540	1395	1265	1115	990	860	730	650	535	420	325	240
				579	**73**	**1560**	**1640**	**1480**	**1340**	**1220**	**1070**	**952**	**827**	**702**	**625**	**514**	**404**	**313**	**231**
			24F	26 13/16	6.98	1675	1760	1590	1440	1305	1155	1020	890	755	670	550	435	335	250
				681	**75**	**1610**	**1690**	**1530**	**1380**	**1260**	**1110**	**981**	**856**	**726**	**644**	**529**	**418**	**322**	**240**
1 1/4" CA	40	2*	16F	18 13/16	10.64	2555	2680	2425	2195	1990	1760	1560	1355	1150	1020	845	665	510	385
32 mm	**131 m**			**478**	**115**	**2460**	**2580**	**2330**	**2110**	**1910**	**1690**	**1500**	**1300**	**1110**	**981**	**813**	**639**	**490**	**370**
Copper Tube			20F	22 13/16	10.98	2635	2765	2505	2265	2055	1820	1605	1395	1185	1055	870	685	525	395
Alum. Fins				**579**	**118**	**2530**	**2660**	**2410**	**2180**	**1980**	**1750**	**1540**	**1340**	**1140**	**1010**	**837**	**659**	**505**	**380**
Fins 3 1/4" x 5 1/4"		2**	24F	26 13/16	11.35	2725	2860	2590	2345	2125	1880	1600	1445	1225	1090	900	710	545	410
83 x 133 mm				**681**	**122**	**2620**	**2750**	**2490**	**2260**	**2040**	**1810**	**1600**	**1390**	**1180**	**1050**	**865**	**683**	**524**	**394**
Thickness .0135"			12F	14 13/16	7.37	1770	1860	1680	1520	1380	1220	1080	940	795	710	585	460	355	265
.34 mm				**376**	**79**	**1700**	**1790**	**1620**	**1460**	**1330**	**1170**	**1040**	**904**	**764**	**683**	**563**	**442**	**341**	**255**
			16F	18 13/16	8.04	1930	2025	1835	1660	1505	1330	1175	1020	870	770	635	500	385	290
				478	**87**	**1860**	**1950**	**1760**	**1600**	**1450**	**1280**	**1130**	**981**	**837**	**740**	**611**	**481**	**370**	**279**
		1	20F	22 13/16	8.37	2010	2110	1910	1730	1570	1385	1225	1065	905	805	665	520	400	300
				579	**90**	**1930**	**2030**	**1840**	**1660**	**1510**	**1330**	**1180**	**1020**	**870**	**774**	**639**	**500**	**385**	**288**
			24F	26 13/16	8.83	2120	2225	1910	1825	1655	1460	1295	1125	955	850	700	550	425	320
				681	**95**	**2040**	**2140**	**1840**	**1760**	**1590**	**1400**	**1240**	**1080**	**918**	**817**	**673**	**529**	**409**	**308**
	50	2*	16F	18 13/16	10.48	2515	2640	2390	2160	1960	1735	1535	1330	1130	1005	830	655	505	375
	164 m			**478**	**113**	**2420**	**2540**	**2300**	**2080**	**1880**	**1670**	**1480**	**1280**	**1090**	**966**	**798**	**630**	**486**	**361**
			20F	22 13/16	11.41	2740	2875	2605	2355	2135	1890	1670	1450	1235	1095	905	710	550	410
				579	**123**	**2640**	**2760**	**2500**	**2260**	**2050**	**1820**	**1610**	**1390**	**1190**	**1050**	**870**	**683**	**529**	**394**
		2**	24F	26 13/16	12.04	2890	3035	2745	2485	2255	1995	1760	1530	1300	1155	955	750	580	435
				681	**130**	**2780**	**2920**	**2640**	**2390**	**2170**	**1920**	**1690**	**1470**	**1250**	**1110**	**918**	**721**	**558**	**418**
			12F	14 13/16	7.83	1880	1875	1785	1615	1465	1295	1145	995	845	750	620	490	375	280
				376	**84**	**1810**	**1800**	**1720**	**1550**	**1410**	**1240**	**1100**	**957**	**813**	**721**	**596**	**471**	**361**	**269**
			16F	18 13/16	8.75	2100	2205	1995	1805	1640	1450	1280	1115	945	840	695	545	420	315
				478	**94**	**2020**	**2120**	**1920**	**1740**	**1580**	**1390**	**1230**	**1070**	**909**	**808**	**668**	**524**	**404**	**303**
		1	20F	22 13/16	9.25	2220	2330	2110	1910	1730	1530	1355	1175	1000	890	730	575	445	330
				579	**100**	**2140**	**2240**	**2030**	**1840**	**1660**	**1470**	**1300**	**1130**	**962**	**856**	**702**	**553**	**428**	**317**
			24F	26 13/16	9.93	2385	2505	2265	2050	1860	1645	1455	1265	1075	955	785	620	475	355
				681	**107**	**2290**	**2410**	**2180**	**1970**	**1790**	**1580**	**1400**	**1220**	**1030**	**918**	**755**	**596**	**457**	**341**
	58	2*	16F	18 13/16	10.50	2520	2645	2395	2165	1965	1740	1535	1335	1135	1010	830	655	505	380
	190 m			**478**	**113**	**2420**	**2540**	**2300**	**2080**	**1890**	**1670**	**1480**	**1280**	**1090**	**971**	**798**	**630**	**486**	**365**
			20F	22 13/16	11.81	2835	2975	2695	2440	2210	1955	1730	1500	1275	1135	935	735	565	425
				579	**127**	**2730**	**2860**	**2590**	**2350**	**2120**	**1880**	**1660**	**1440**	**1230**	**1090**	**899**	**707**	**543**	**409**
		2**	24F	26 13/16	12.68	3045	3195	2890	2620	2375	2100	1855	1615	1370	1220	1005	790	610	455
				681	**136**	**2930**	**3070**	**2780**	**2520**	**2280**	**2020**	**1780**	**1550**	**1320**	**1170**	**966**	**760**	**587**	**438**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24F high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Front Outlet

Table PD-13 — Ratings 6″ (152 mm) Deep, Type F - Enclosures With Steel Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
			12F	14 3/4	5.70	1370	1440	1300	1180	1070	950	840	725	615	545	450	355	275	205
				375	**61**	**1320**	**1380**	**1250**	**1140**	**1030**	**914**	**808**	**697**	**591**	**524**	**433**	**341**	**264**	**197**
			16F	18 3/4	6.30	1510	1590	1430	1300	1180	1040	920	800	680	605	495	390	300	225
				476	**68**	**1450**	**1530**	**1380**	**1250**	**1140**	**1000**	**885**	**769**	**654**	**582**	**476**	**375**	**288**	**216**
1 1/4″ Steel		1	20F	22 3/4	6.85	1640	1720	1560	1410	1280	1130	1000	870	735	655	540	425	325	245
32 mm				**578**	**74**	**1580**	**1650**	**1500**	**1360**	**1230**	**1090**	**962**	**837**	**707**	**630**	**519**	**409**	**313**	**236**
Steel Tube			24F	26 3/4	7.20	1730	1815	1645	1490	1350	1195	1055	915	780	690	570	450	345	260
Steel Fins				**679**	**78**	**1660**	**1740**	**1580**	**1430**	**1300**	**1150**	**1010**	**880**	**750**	**664**	**548**	**433**	**332**	**250**
Fins 1 1/2″ x 5 1/4″	52		16F	18 3/4	8.60	2060	2160	1960	1770	1610	1420	1260	1090	925	825	680	535	410	305
64 x 133 mm	**171 m**			**476**	**93**	**1980**	**2080**	**1880**	**1700**	**1550**	**1360**	**1210**	**1050**	**889**	**793**	**654**	**514**	**394**	**293**
Thickness .027″		2*	20F	22 3/4	9.25	2220	2330	2110	1910	1730	1530	1350	1175	1000	885	730	575	445	330
.69 mm				**578**	**100**	**2140**	**2240**	**2030**	**1840**	**1660**	**1470**	**1300**	**1130**	**962**	**851**	**702**	**553**	**428**	**317**
			24F	26 3/4	9.73	2335	2450	2220	2010	1820	1610	1425	1240	1050	935	770	605	465	350
				679	**105**	**2240**	**2360**	**2140**	**1930**	**1750**	**1550**	**1370**	**1190**	**1010**	**899**	**740**	**582**	**447**	**337**
			20F	22 3/4	9.90	2380	2500	2260	2050	1860	1640	1450	1260	1070	950	785	620	475	355
				578	**107**	**2290**	**2400**	**2170**	**1970**	**1790**	**1580**	**1390**	**1210**	**1030**	**914**	**755**	**596**	**457**	**341**
		2**	24F	26 3/4	10.41	2500	2625	2375	2150	1950	1725	1525	1325	1125	1000	825	650	500	375
				679	**112**	**2400**	**2520**	**2280**	**2070**	**1880**	**1660**	**1470**	**1270**	**1080**	**962**	**793**	**625**	**481**	**361**

*4″ (102 mm) Centers
**8″ (203 mm) Centers
24F High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet

Table PD-14 — Ratings 4" (102 mm) Deep, Type T - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** IBR Factor — Steam to Hot Water 1.05	220°F **104°C** 0.95	210°F **99°C** 0.86	200°F **93°C** 0.78	190°F **88°C** 0.69	180°F **82°C** 0.61	170°F **77°C** 0.53	160°F **71°C** 0.45	150°F **66°C** 0.40	140°F **60°C** 0.33	130°F **54°C** 0.26	120°F **49°C** 0.20	110°F **43°C** 0.15	100°F **38°C**
			10T	13 9/16	4.12	990	1049	940	850	770	685	605	525	445	395	325	255	200	150
				344	**44**	**952**	**1000**	**904**	**817**	**740**	**659**	**582**	**505**	**428**	**380**	**313**	**245**	**192**	**144**
			14T	17 9/16	4.29	1030	1080	980	885	805	710	630	545	465	410	340	270	205	155
				466	**46**	**990**	**1040**	**942**	**851**	**774**	**683**	**606**	**524**	**447**	**394**	**327**	**260**	**197**	**149**
		1	18T	21 9/16	4.41	1060	1115	1005	910	825	730	645	560	475	425	350	275	210	160
				548	**47**	**1020**	**1070**	**966**	**875**	**793**	**702**	**620**	**538**	**457**	**409**	**337**	**264**	**202**	**154**
			24T	27 9/16	4.58	1100	1155	1045	945	860	760	670	585	495	440	365	285	220	165
				700	**49**	**1060**	**1110**	**1000**	**909**	**827**	**731**	**644**	**563**	**476**	**423**	**351**	**274**	**212**	**159**
3/4" CA	40	2*	14T	17 9/16	6.52	1565	1645	1485	1345	1220	1080	955	830	705	625	515	405	315	235
19 mm	**131 m**			**466**	**70**	**1500**	**1580**	**1430**	**1290**	**1170**	**1040**	**918**	**798**	**678**	**601**	**495**	**389**	**303**	**226**
Copper Tube			18T	21 9/16	7.14	1715	1800	1630	1475	1340	1185	1045	910	770	685	565	445	345	255
Alum. Fins				**548**	**77**	**1650**	**1730**	**1570**	**1420**	**1290**	**1140**	**1000**	**875**	**740**	**659**	**543**	**428**	**332**	**245**
Fins 3 1/4" x 3 1/4"		2**	24T	27 9/16	7.41	1780	1870	1690	1530	1390	1230	1085	945	800	710	585	460	355	265
83 x 83 mm				**700**	**80**	**1710**	**1800**	**1620**	**1470**	**1340**	**1180**	**1040**	**909**	**769**	**683**	**563**	**442**	**341**	**255**
Thickness .0135"			10T	13 9/16	4.91	1180	1240	1120	1015	920	815	720	625	530	470	390	305	235	175
.34 mm				**344**	**53**	**1140**	**1190**	**1080**	**976**	**885**	**784**	**692**	**601**	**510**	**452**	**375**	**293**	**226**	**168**
			14T	17 9/16	5.25	1260	1325	1195	1085	980	870	770	670	565	505	415	330	250	190
				466	**57**	**1210**	**1270**	**1150**	**1040**	**942**	**837**	**740**	**644**	**543**	**486**	**399**	**317**	**240**	**183**
		1	18T	21 9/16	5.58	1340	1405	1275	1150	1045	925	815	710	605	535	440	350	270	200
				548	**60**	**1290**	**1350**	**1230**	**1110**	**1000**	**889**	**784**	**683**	**582**	**514**	**423**	**337**	**260**	**192**
			24T	27 9/16	5.89	1415	1485	1345	1215	1105	975	865	750	635	565	465	370	285	210
				700	**63**	**1360**	**1430**	**1290**	**1170**	**1060**	**938**	**832**	**721**	**611**	**543**	**447**	**356**	**274**	**202**
	50	2*	14T	17 9/16	6.89	1655	1740	1570	1425	1290	1140	1010	875	745	660	545	430	330	250
	164 m			**466**	**74**	**1590**	**1670**	**1510**	**1370**	**1240**	**1100**	**971**	**841**	**716**	**635**	**524**	**413**	**317**	**240**
			18T	21 9/16	7.81	1875	1970	1780	1610	1460	1295	1145	995	845	750	620	490	375	280
				548	**84**	**1800**	**1890**	**1710**	**1550**	**1400**	**1240**	**1100**	**957**	**813**	**721**	**596**	**471**	**361**	**269**
		2**	24T	27 9/16	8.25	1980	2080	1880	1700	1545	1365	1205	1050	890	790	655	515	395	295
				700	**89**	**1900**	**2000**	**1810**	**1640**	**1490**	**1310**	**1160**	**1010**	**856**	**760**	**630**	**495**	**380**	**284**
			10T	13 9/16	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
				344	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
			14T	17 9/16	5.75	1380	1450	1310	1185	1075	950	840	730	620	550	455	360	275	205
				466	**62**	**1330**	**1390**	**1260**	**1140**	**1030**	**914**	**808**	**702**	**596**	**529**	**438**	**346**	**264**	**197**
		1	18T	21 9/16	6.20	1490	1565	1415	1280	1160	1030	910	790	760	595	490	385	300	225
				548	**67**	**1430**	**1500**	**1360**	**1230**	**1120**	**990**	**875**	**760**	**644**	**572**	**471**	**370**	**288**	**216**
			24T	27 9/16	6.66	1600	1680	1520	1375	1250	1105	975	850	720	640	530	415	320	240
				700	**72**	**1540**	**1615**	**1460**	**1320**	**1200**	**1060**	**940**	**820**	**690**	**615**	**510**	**400**	**310**	**230**
	58	2*	14T	17 9/16	7.04	1690	1775	1605	1455	1320	1165	1030	895	760	675	555	440	340	255
	190 m			**466**	**76**	**1620**	**1710**	**1540**	**1400**	**1270**	**1120**	**990**	**861**	**731**	**649**	**534**	**423**	**327**	**245**
			18T	21 9/16	8.20	1970	2070	1870	1695	1535	1360	1200	1045	885	790	650	510	395	295
				548	**88**	**1890**	**1990**	**1800**	**1630**	**1480**	**1310**	**1150**	**1000**	**851**	**760**	**625**	**490**	**380**	**284**
		2**	24T	27 9/16	8.81	2115	2220	2010	1820	1650	1460	1290	1120	950	845	700	550	425	315
				700	**95**	**2030**	**2140**	**1930**	**1750**	**1590**	**1400**	**1240**	**1080**	**914**	**813**	**673**	**529**	**409**	**303**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24T high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

Performance Data

Top Outlet

Table PD-15 — Ratings 4" (102 mm) Deep, Type T - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
					Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**		Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**												
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10T	13 9/16	4.20	1010	1060	960	870	790	695	615	535	455	405	335	260	200	150
				344	**45**	**971**	**1020**	**923**	**837**	**760**	**668**	**591**	**514**	**438**	**389**	**322**	**250**	**192**	**144**
			14T	17 9/16	4.37	1050	1100	995	905	820	725	640	555	470	420	345	275	210	155
				466	**47**	**1010**	**1060**	**957**	**870**	**789**	**697**	**615**	**534**	**452**	**404**	**332**	**264**	**202**	**149**
		1	18T	21 9/16	4.50	1080	1135	1025	930	840	745	660	570	485	430	355	280	215	160
				548	**48**	**1040**	**1090**	**986**	**894**	**808**	**716**	**635**	**548**	**466**	**413**	**341**	**269**	**207**	**154**
			24T	27 9/16	4.66	1120	1175	1065	965	875	770	685	595	505	450	370	290	225	170
				700	**50**	**1080**	**1130**	**1029**	**928**	**841**	**740**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
1" CA	40	2*	14T	17 9/16	6.60	1585	1665	1505	1365	1235	1095	965	840	715	635	525	410	315	235
25 mm	**131m**			**466**	**71**	**1520**	**1600**	**1450**	**1310**	**1190**	**1050**	**928**	**808**	**688**	**611**	**505**	**394**	**303**	**226**
Cooper Tube			18T	21 9/16	7.16	1720	1805	1635	1480	1340	1185	1050	910	775	690	565	445	345	260
Alum. Fins				**548**	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**543**	**428**	**332**	**250**
Fins 3 1/4" x 3 1/4"		2**	24T	27 9/16	7.41	1780	1870	1690	1530	1390	1230	1085	945	800	710	585	460	355	265
83 x 83 mm				**700**	**80**	**1710**	**1800**	**1620**	**1470**	**1340**	**1180**	**1040**	**909**	**769**	**683**	**563**	**442**	**341**	**255**
Thickness .0135"			10T	13 9/16	4.91	1180	1240	1120	1015	920	815	720	625	530	470	390	305	235	175
.34 mm				**344**	**53**	**1140**	**1190**	**1080**	**976**	**885**	**784**	**692**	**601**	**510**	**452**	**375**	**293**	**226**	**168**
			14T	17 9/16	5.29	1270	1335	1205	1090	990	875	775	675	570	510	420	330	255	190
				466	**57**	**1220**	**1280**	**1160**	**1050**	**952**	**841**	**745**	**649**	**548**	**490**	**404**	**317**	**245**	**183**
		1	18T	21 9/16	5.62	1350	1420	1280	1160	1055	930	825	715	610	540	445	350	270	200
				548	**60**	**1300**	**1360**	**1230**	**1120**	**1010**	**894**	**793**	**688**	**587**	**519**	**428**	**337**	**260**	**192**
			24T	27 9/16	5.93	1425	1495	1355	1225	1110	985	870	755	640	570	470	370	285	215
				700	**64**	**1370**	**1440**	**1300**	**1180**	**1070**	**947**	**837**	**726**	**615**	**548**	**452**	**356**	**274**	**207**
	50	2*	14T	17 9/16	6.75	1620	1700	1540	1395	1265	1120	990	860	730	650	535	420	325	245
	164 m			**466**	**73**	**1560**	**1640**	**1480**	**1340**	**1220**	**1080**	**952**	**827**	**702**	**625**	**514**	**404**	**313**	**236**
			18T	21 9/16	7.66	1840	1930	1750	1580	1435	1270	1120	975	830	735	605	480	370	275
				548	**82**	**1770**	**1860**	**1680**	**1520**	**1380**	**1220**	**1080**	**938**	**798**	**707**	**582**	**462**	**356**	**264**
		2**	24T	27 9/16	8.08	1940	2035	1845	1670	1515	1340	1185	1030	875	775	640	505	390	290
				700	**87**	**1870**	**1970**	**1770**	**1610**	**1460**	**1290**	**1140**	**990**	**841**	**745**	**615**	**486**	**375**	**279**
			10T	13 9/16	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
				344	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
		1	14T	17 9/16	5.79	1390	1460	1320	1195	1085	960	850	735	625	555	460	360	280	210
				466	**62**	**1340**	**1400**	**1270**	**1150**	**1040**	**923**	**817**	**707**	**601**	**534**	**442**	**346**	**269**	**202**
			18T	21 9/16	6.25	1500	1575	1425	1290	1170	1035	915	795	675	600	495	390	300	225
				548	**67**	**1440**	**1515**	**1370**	**1240**	**1125**	**995**	**880**	**765**	**650**	**575**	**475**	**375**	**290**	**215**
			24T	27 9/16	6.73	1615	1695	1535	1390	1260	1115	985	855	725	645	530	420	325	240
				700	**72**	**1550**	**1630**	**1480**	**1340**	**1210**	**1070**	**947**	**822**	**697**	**620**	**510**	**404**	**313**	**231**
	58	2*	14T	17 9/16	6.81	1635	1715	1555	1405	1275	1130	995	865	735	655	540	425	325	245
	190 m			**466**	**73**	**1570**	**1650**	**1500**	**1350**	**1230**	**1090**	**957**	**832**	**707**	**630**	**519**	**409**	**313**	**236**
			18T	21 9/16	7.93	1905	2000	1810	1640	1485	1315	1160	1010	855	760	630	495	380	285
				548	**85**	**1830**	**1920**	**1740**	**1580**	**1430**	**1260**	**1120**	**971**	**822**	**731**	**606**	**476**	**365**	**274**
		2**	24T	27 9/16	8.54	2050	2150	1950	1765	1600	1415	1250	1085	920	820	675	535	410	310
				700	**92**	**1970**	**2070**	**1880**	**1700**	**1540**	**1360**	**1200**	**1040**	**885**	**789**	**649**	**514**	**394**	**298**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24T high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Table PD-16 — Ratings 4" (102 mm) Deep, Type T - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10T	13 9/16	4.25	1020	1070	970	875	795	705	620	540	460	410	335	265	205	150
				344	**46**	**981**	**1030**	**933**	**840**	**764**	**678**	**596**	**519**	**442**	**394**	**322**	**255**	**197**	**144**
			14T	17 9/16	4.41	1060	1115	1005	910	825	730	645	560	475	425	350	275	210	160
				466	**47**	**1029**	**1070**	**966**	**875**	**793**	**702**	**620**	**538**	**457**	**409**	**337**	**264**	**202**	**154**
		1	18T	21 9/16	4.58	1100	1155	1045	945	860	760	670	585	495	440	365	285	220	165
				548	**49**	**1060**	**1110**	**1000**	**909**	**827**	**731**	**644**	**563**	**476**	**423**	**351**	**274**	**212**	**159**
			24T	27 9/16	4.75	1140	1195	1085	970	890	785	695	605	515	455	375	295	230	170
				700	**51**	**1100**	**1150**	**1040**	**933**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
1 1/4" CA	40	2*	14T	17 9/16	6.54	1570	1650	1490	1350	1225	1085	960	830	705	630	520	410	315	235
32 mm	**131 m**			**466**	**70**	**1510**	**1590**	**1430**	**1300**	**1180**	**1040**	**923**	**798**	**678**	**606**	**500**	**394**	**303**	**226**
Copper Tube			18T	21 9/16	7.12	1710	1795	1625	1470	1335	1180	1045	905	770	685	565	445	340	255
Alum. Fins				**548**	**77**	**1640**	**1730**	**1560**	**1410**	**1280**	**1140**	**1000**	**870**	**740**	**659**	**543**	**428**	**327**	**245**
Fins 3 1/4" x 3 1/4"		2**	24T	27 9/16	7.39	1775	1865	1685	1525	1385	1225	1080	940	800	710	585	460	355	265
83 x 83 mm				**700**	**80**	**1710**	**1790**	**1620**	**1470**	**1330**	**1180**	**1040**	**904**	**769**	**683**	**563**	**442**	**341**	**255**
Thickness .0135"			10T	13 9/16	4.95	1190	1250	1130	1025	930	820	725	630	535	475	390	310	240	180
.34 mm				**344**	**53**	**1140**	**1200**	**1090**	**986**	**894**	**789**	**697**	**606**	**514**	**457**	**375**	**298**	**231**	**173**
			14T	17 9/16	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
				466	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
		1	18T	21 9/16	5.70	1370	1440	1300	1180	1070	945	835	725	615	550	450	355	275	205
				548	**61**	**1320**	**1380**	**1250**	**1140**	**1030**	**909**	**803**	**697**	**591**	**529**	**433**	**341**	**264**	**197**
			24T	27 9/16	6.02	1445	1515	1370	1240	1125	995	880	765	650	580	475	375	290	215
				700	**65**	**1390**	**1460**	**1320**	**1190**	**1080**	**957**	**846**	**736**	**625**	**558**	**457**	**361**	**279**	**207**
	50	2*	14T	17 9/16	6.58	1580	1660	1500	1360	1230	1090	965	835	710	630	520	410	315	235
	164 m			**466**	**71**	**1520**	**1600**	**1440**	**1310**	**1180**	**1050**	**928**	**803**	**683**	**606**	**500**	**394**	**303**	**226**
			18T	21 9/16	7.50	1800	1890	1620	1550	1405	1240	1100	955	810	720	595	470	360	270
				548	**81**	**1730**	**1820**	**1560**	**1490**	**1350**	**1190**	**1060**	**918**	**779**	**692**	**572**	**452**	**346**	**260**
		2**	24T	27 9/16	7.91	1900	1995	1805	1635	1480	1310	1160	1005	855	760	625	495	380	285
				700	**85**	**1830**	**1920**	**1740**	**1570**	**1420**	**1260**	**1120**	**966**	**822**	**731**	**601**	**476**	**365**	**274**
			10T	13 9/16	5.33	1280	1345	1215	1100	1000	885	780	680	575	510	420	330	255	190
				344	**57**	**1230**	**1290**	**1170**	**1060**	**962**	**851**	**750**	**654**	**553**	**490**	**404**	**317**	**245**	**183**
			14T	17 9/16	5.83	1400	1470	1330	1205	1090	965	855	740	630	560	460	365	280	210
				466	**63**	**1350**	**1410**	**1280**	**1160**	**1050**	**928**	**822**	**712**	**606**	**538**	**442**	**351**	**269**	**202**
		1	18T	21 9/16	6.29	1510	1585	1360	1300	1180	1040	920	800	680	605	500	390	300	225
				548	**68**	**1450**	**1520**	**1310**	**1250**	**1140**	**1000**	**885**	**769**	**654**	**582**	**481**	**375**	**288**	**216**
			24T	27 9/16	6.77	1625	1705	1545	1400	1270	1120	990	860	730	650	535	420	325	245
				700	**73**	**1560**	**1640**	**1490**	**1350**	**1200**	**1080**	**952**	**827**	**702**	**625**	**514**	**404**	**313**	**236**
	58	2*	14T	17 9/16	6.66	1600	1680	1520	1375	1250	1105	975	850	720	640	530	415	320	240
	190 m			**466**	**72**	**1540**	**1620**	**1460**	**1320**	**1200**	**1060**	**938**	**817**	**692**	**615**	**510**	**399**	**308**	**231**
			18T	21 9/16	7.62	1830	1920	1740	1575	1425	1260	1115	970	825	730	605	475	365	275
				548	**82**	**1760**	**1850**	**1670**	**1520**	**1370**	**1210**	**1070**	**933**	**793**	**702**	**582**	**457**	**351**	**264**
		2**	24T	27 9/16	8.18	1965	2065	1865	1690	1530	1355	1200	1040	885	785	650	510	395	295
				700	**88**	**1890**	**1990**	**1790**	**1620**	**1470**	**1300**	**1150**	**1000**	**851**	**755**	**625**	**490**	**380**	**284**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24T high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet

Table PD-17 — Ratings 6″ (152 mm) Deep, Type T - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
					Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**		Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**												
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12T	15 9/16	6.12	1470	1545	1395	1265	1145	1015	895	780	660	590	485	380	295	220
				395	**66**	**1410**	**1490**	**1340**	**1220**	**1100**	**976**	**861**	**750**	**635**	**567**	**466**	**365**	**284**	**212**
			16T	19 9/16	6.25	1500	1575	1425	1290	1170	1035	915	795	675	600	495	390	300	225
				497	**67**	**1440**	**1520**	**1370**	**1240**	**1120**	**995**	**880**	**764**	**649**	**577**	**476**	**375**	**288**	**216**
		1	20T	23 9/16	6.41	1540	1615	1465	1325	1200	1060	940	815	690	615	510	400	310	230
				598	**69**	**1480**	**1550**	**1410**	**1270**	**1150**	**1020**	**904**	**784**	**664**	**591**	**490**	**385**	**298**	**221**
			24T	27 9/16	6.64	1595	1675	1515	1370	1245	1100	970	845	720	640	525	415	320	240
				700	**71**	**1530**	**1610**	**1460**	**1320**	**1200**	**1060**	**933**	**813**	**692**	**615**	**505**	**399**	**308**	**231**
1 1/4″ CA	40	2*	16T	19 9/16	9.85	2365	2480	2245	2035	1845	1630	1440	1250	1065	945	780	615	470	355
32 mm	**131 m**			**497**	**106**	**2270**	**2380**	**2160**	**1960**	**1770**	**1570**	**1380**	**1200**	**1020**	**909**	**750**	**591**	**452**	**341**
Copper Tube			20T	23 9/16	10.43	2505	2630	2380	2155	1955	1730	1530	1330	1125	1000	825	650	500	375
Alum. Fins				**598**	**112**	**2410**	**2530**	**2290**	**2070**	**1880**	**1660**	**1470**	**1280**	**1080**	**962**	**793**	**625**	**481**	**361**
Fins 3 1/4″ x 5 1/4″		2**	24T	27 9/16	10.81	2595	2725	2465	2230	2025	1790	1580	1375	1165	1040	855	675	520	380
83 x 133 mm				**700**	**116**	**2500**	**2620**	**2370**	**2140**	**1950**	**1720**	**1520**	**1320**	**1120**	**1000**	**822**	**649**	**500**	**365**
Thickness .0135″			12T	15 9/16	7.58	1820	1910	1730	1565	1420	1255	1110	965	820	730	600	475	365	275
.34 mm				**395**	**82**	**1750**	**1840**	**1660**	**1500**	**1360**	**1210**	**1070**	**928**	**789**	**702**	**577**	**457**	**351**	**264**
			16T	19 9/16	7.95	1910	2005	1815	1640	1490	1315	1165	1010	860	765	630	495	380	285
				497	**86**	**1840**	**1930**	**1740**	**1580**	**1430**	**1260**	**1120**	**971**	**827**	**736**	**606**	**476**	**365**	**274**
		1	20T	23 9/16	8.37	2010	2110	1910	1730	1565	1390	1225	1065	905	805	665	520	400	300
				598	**90**	**1930**	**2030**	**1840**	**1660**	**1500**	**1340**	**1180**	**1020**	**870**	**774**	**639**	**500**	**385**	**288**
			24T	27 9/16	8.83	2120	2225	2015	1825	1655	1460	1295	1125	955	850	700	550	425	320
				700	**95**	**2040**	**2140**	**1940**	**1760**	**1590**	**1400**	**1240**	**1080**	**918**	**817**	**673**	**529**	**409**	**308**
	50	2*	16T	19 9/16	10.37	2490	2615	2365	2140	1940	1720	1520	1320	1120	995	820	645	500	370
	164 m			**497**	**112**	**2390**	**2520**	**2270**	**2060**	**1870**	**1650**	**1460**	**1270**	**1080**	**957**	**789**	**620**	**481**	**356**
			20T	23 9/16	11.41	2740	2875	2600	2355	2135	1890	1670	1450	1230	1095	905	710	550	410
				598	**123**	**2640**	**2760**	**2500**	**2260**	**2050**	**1820**	**1610**	**1390**	**1180**	**1050**	**870**	**683**	**529**	**394**
		2**	24T	27 9/16	12.04	2890	3035	2745	2485	2255	1995	1760	1530	1300	1155	955	750	580	435
				700	**130**	**2780**	**2920**	**2640**	**2390**	**2170**	**1920**	**1690**	**1470**	**1250**	**1110**	**918**	**721**	**558**	**418**
			12T	15 9/16	8.33	2000	2100	1900	1720	1560	1380	1220	1060	900	800	660	520	400	300
				395	**90**	**1920**	**2020**	**1830**	**1650**	**1500**	**1300**	**1170**	**1020**	**865**	**769**	**635**	**500**	**385**	**288**
			16T	19 9/16	8.87	2130	2235	2025	1830	1660	1470	1300	1130	860	850	700	555	425	320
				497	**95**	**2050**	**2150**	**1950**	**1760**	**1600**	**1410**	**1250**	**1090**	**923**	**817**	**673**	**534**	**409**	**308**
		1	20T	23 9/16	9.41	2260	2375	2145	1945	1760	1560	1380	1200	1015	905	745	590	450	340
				598	**101**	**2170**	**2280**	**2060**	**1870**	**1690**	**1500**	**1330**	**1150**	**976**	**870**	**716**	**567**	**433**	**327**
			24T	27 9/16	10.12	2430	2550	2310	2090	1895	1675	1480	1290	1095	970	800	630	485	365
				700	**109**	**2340**	**2450**	**2220**	**2010**	**1820**	**1610**	**1420**	**1240**	**1050**	**933**	**769**	**606**	**466**	**351**
	58	2*	16T	19 9/16	10.64	2555	2680	2425	2195	1990	1760	1560	1355	1150	1020	845	665	510	385
	190 m			**497**	**115**	**2460**	**2580**	**2330**	**2110**	**1910**	**1690**	**1500**	**1300**	**1110**	**981**	**813**	**639**	**490**	**370**
			20T	23 9/16	12.02	2885	3030	2740	2480	2250	1990	1760	1530	1300	1155	950	750	575	430
				598	**129**	**2770**	**2910**	**2640**	**2380**	**2160**	**1910**	**1690**	**1470**	**1250**	**1110**	**914**	**721**	**553**	**413**
		2*	24T	27 9/16	12.91	3100	3255	2945	2665	2420	2135	1890	1645	1395	1240	1025	805	620	465
				700	**139**	**2980**	**3130**	**2830**	**2560**	**2330**	**2050**	**1820**	**1580**	**1340**	**1190**	**986**	**774**	**596**	**447**

*5 1/2″ (140 mm) Centers
**9 1/2″ (241 mm) Centers
All two tier and 24T high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Table PD-18 — Ratings 6" (152 mm) Deep, Type T - Enclosures With Steel Elements

				Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**		Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**													
							220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F	120°F	110°F	100°F
	Fin Series Per Foot			Install. Height Inches	EDR Sq. Ft.	Btu/Hr./Ft.	**104°C**	**99°C**	**93°C**	**88°C**	**82°C**	**77°C**	**71°C**	**66°C**	**60°C**	**54°C**	**49°C**	**43°C**	**38°C**
							IBR Factor — Steam to Hot Water												
Element	**Per Meter**	Tiers	Encl.	**mm**	**Sq. M**	**Watts/Meter**	1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12T	15 5/8	6.15	1480	1550	1410	1270	1150	1020	900	785	665	590	485	385	295	220
				397	**66**	**1420**	**1490**	**1360**	**1220**	**1110**	**981**	**865**	**755**	**639**	**567**	**466**	**370**	**284**	**212**
			16T	19 5/8	6.40	1540	1620	1460	1320	1200	1060	940	815	690	615	505	400	305	230
				498	**69**	**1480**	**1560**	**1400**	**1270**	**1150**	**1020**	**904**	**784**	**664**	**591**	**486**	**385**	**293**	**221**
1 1/4" Steel		1	20T	23 5/8	6.65	1590	1670	1510	1370	1240	1100	970	840	715	635	525	410	315	235
32 mm				**600**	**72**	**1530**	**1610**	**1450**	**1320**	**1190**	**1060**	**933**	**808**	**688**	**611**	**505**	**394**	**303**	**226**
Steel Tube			24T	27 5/8	6.99	1680	1765	1595	1445	1310	1160	1025	890	755	670	555	435	335	250
Steel Fins				**702**	**75**	**1620**	**1700**	**1530**	**1390**	**1260**	**1120**	**986**	**856**	**726**	**644**	**534**	**418**	**322**	**240**
Fins 2 1/2" x 5 1/4"	52		16T	19 5/8	8.90	2140	2250	2030	1840	1670	1480	1310	1135	860	855	705	555	425	320
65 x 133 mm	**171 m**			**498**	**96**	**2060**	**2160**	**1950**	**1770**	**1610**	**1420**	**1260**	**1090**	**923**	**822**	**678**	**534**	**409**	**308**
Thickness .027"		2*	20T	23 5/8	9.45	2270	2380	2160	1950	1770	1570	1380	1205	1020	905	750	590	455	340
.69 mm				**600**	**102**	**2180**	**2290**	**2080**	**1880**	**1700**	**1510**	**1330**	**1160**	**981**	**870**	**721**	**567**	**438**	**327**
			24T	27 5/8	9.94	2385	2505	2265	2050	1860	1645	1455	1265	1075	955	785	620	475	360
				702	**107**	**2290**	**2410**	**2180**	**1970**	**1790**	**1580**	**1400**	**1220**	**1030**	**918**	**755**	**596**	**457**	**346**
			20T	23 5/8	9.85	2360	2480	2240	2030	1840	1630	1440	1250	1060	945	775	610	470	350
				600	**106**	**2270**	**2380**	**2150**	**1950**	**1770**	**1570**	**1380**	**1200**	**1020**	**909**	**745**	**587**	**452**	**337**
		2*	24T	27 5/8	10.36	2485	2610	2360	2135	1940	1715	1515	1315	1120	995	820	645	495	375
				702	**112**	**2390**	**2510**	**2270**	**2050**	**1870**	**1650**	**1460**	**1260**	**1080**	**957**	**789**	**620**	**476**	**361**

*4" (102 mm) Centers
**8" (203 mm) Centers
24T High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet – TA

Table PD-19 — Ratings 4" (102 mm) Deep, Type TA - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
			10TA	13 1/16	4.25	1020	1070	970	875	795	705	620	540	460	410	335	265	205	150
				33	**46**	**981**	**1030**	**933**	**841**	**764**	**678**	**596**	**519**	**442**	**394**	**322**	**255**	**197**	**144**
			14TA	17 1/16	4.41	1060	1115	1005	910	825	730	645	560	475	425	350	275	210	160
				433	**47**	**1020**	**1070**	**966**	**875**	**793**	**702**	**620**	**538**	**457**	**409**	**337**	**264**	**202**	**154**
		1	18TA	21 1/16	4.58	1100	1155	1045	945	860	760	670	585	495	440	365	285	220	165
				535	**49**	**1060**	**1110**	**1000**	**909**	**827**	**731**	**644**	**563**	**476**	**423**	**351**	**274**	**212**	**159**
			24TA	27 1/16	4.75	1140	1195	1085	980	890	785	695	605	515	455	375	295	230	170
				687	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
3/4" CA	40	2*	14TA	17 1/16	6.70	1610	1690	1530	1385	1255	1110	980	855	725	645	530	420	320	240
19 mm	**131 m**			**433**	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**822**	**697**	**620**	**510**	**404**	**308**	**231**
Copper Tube			18TA	21 1/16	7.41	1780	1870	1690	1530	1390	1230	1085	945	800	710	585	460	355	265
Alum. Fins				**535**	**80**	**1710**	**1800**	**1620**	**1470**	**1340**	**1180**	**1040**	**909**	**769**	**683**	**563**	**442**	**341**	**255**
Fins 3 1/4" x 3 1/4"		2**	24TA	27 1/16	7.68	1845	1935	1750	1585	1430	1275	1125	980	830	740	610	480	370	275
83 x 83 mm				**687**	**83**	**1770**	**1860**	**1680**	**1520**	**1380**	**1230**	**1080**	**942**	**798**	**712**	**587**	**462**	**356**	**264**
Thickness .0135"			10TA	13 1/16	5.08	1220	1280	1160	1050	950	840	745	645	550	490	400	315	245	185
.34 mm				**332**	**55**	**1170**	**1230**	**1120**	**1010**	**914**	**808**	**716**	**620**	**529**	**471**	**385**	**303**	**236**	**178**
			14TA	17 1/16	5.45	1310	1375	1245	1125	1020	905	800	695	590	525	430	340	260	195
				433	**59**	**1260**	**1320**	**1200**	**1080**	**981**	**870**	**769**	**668**	**567**	**505**	**413**	**327**	**250**	**188**
		1	18TA	21 1/16	5.83	1400	1470	1330	1205	1090	965	855	740	630	560	460	365	280	210
				535	**63**	**1350**	**1410**	**1280**	**1160**	**1050**	**928**	**822**	**712**	**606**	**538**	**442**	**351**	**269**	**202**
			24TA	27 1/16	6.16	1480	1555	1405	1270	1155	1020	900	785	665	590	490	385	295	220
				687	**66**	**1420**	**1500**	**1350**	**1220**	**1110**	**981**	**865**	**755**	**639**	**567**	**471**	**370**	**284**	**212**
	50	2*	14TA	17 1/16	7.16	1720	1805	1635	1480	1340	1185	1050	910	775	690	565	445	345	260
	164 m			**433**	**77**	**1650**	**1740**	**1570**	**1420**	**1290**	**1140**	**1010**	**875**	**745**	**664**	**543**	**428**	**332**	**250**
			18TA	21 1/16	8.16	1960	2060	1860	1685	1530	1350	1195	1040	880	785	645	510	390	295
				535	**88**	**1880**	**1980**	**1790**	**1620**	**1470**	**1300**	**1150**	**1000**	**846**	**755**	**620**	**490**	**375**	**284**
		2**	24TA	27 1/16	8.62	2070	2175	1965	1780	1615	1430	1260	1100	930	830	685	540	415	310
				687	**93**	**1990**	**2090**	**1890**	**1710**	**1550**	**1380**	**1210**	**1060**	**894**	**798**	**659**	**519**	**399**	**298**
			10TA	13 1/16	5.54	1330	1395	1265	1145	1035	915	810	705	600	530	440	345	265	200
				332	**60**	**1280**	**1340**	**1220**	**1100**	**995**	**880**	**779**	**678**	**577**	**510**	**423**	**332**	**255**	**192**
			14TA	17 1/16	6.04	1450	1520	1375	1245	1130	1000	885	770	650	580	480	375	290	215
				433	**65**	**1390**	**1460**	**1320**	**1200**	**1090**	**962**	**851**	**740**	**625**	**558**	**462**	**361**	**279**	**207**
		1	18TA	21 1/16	6.54	1570	1650	1490	1350	1225	1085	960	830	705	630	520	410	315	235
				535	**70**	**1510**	**1590**	**1430**	**1300**	**1180**	**1040**	**923**	**798**	**678**	**606**	**500**	**394**	**303**	**226**
			24TA	27 1/16	7.04	1690	1775	1605	1455	1320	1165	1030	895	760	675	560	440	340	250
				687	**76**	**1620**	**1710**	**1540**	**1400**	**1270**	**1120**	**990**	**861**	**731**	**649**	**538**	**423**	**327**	**240**
	58	2*	14TA	17 1/16	7.39	1775	1865	1685	1525	1385	1225	1080	940	800	710	585	460	355	265
	190 m			**433**	**80**	**1710**	**1790**	**1620**	**1470**	**1330**	**1180**	**1040**	**904**	**769**	**683**	**563**	**442**	**341**	**255**
			18TA	21 1/16	8.64	2075	2180	1970	1785	1620	1430	1265	1100	935	830	685	540	415	310
				535	**93**	**2000**	**2100**	**1890**	**1720**	**1560**	**1380**	**1220**	**1060**	**899**	**798**	**659**	**519**	**399**	**298**
		2**	24TA	27 1/16	9.31	2235	2345	2120	1920	1745	1540	1365	1185	1005	895	740	580	445	335
				687	**100**	**2150**	**2260**	**2049**	**1850**	**1680**	**1480**	**1310**	**1140**	**966**	**861**	**712**	**558**	**428**	**322**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24TA high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

Performance Data

Top Outlet – TA

Table PD-20 — Ratings 4" (102 mm) Deep, Type TA - Enclosures With Copper/Aluminum Element

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10TA	13 1/16	4.29	1030	1080	980	885	805	710	630	545	465	410	340	265	205	155
				332	**46**	**990**	**1040**	**942**	**851**	**774**	**683**	**606**	**524**	**447**	**394**	**327**	**255**	**197**	**149**
			14TA	17 1/16	4.45	1070	1125	1015	920	835	740	650	565	480	430	355	280	215	160
				433	**48**	**1030**	**1080**	**976**	**885**	**803**	**712**	**625**	**543**	**462**	**413**	**341**	**269**	**207**	**154**
		1	18 TA	21 1/16	4.66	1120	1175	1065	965	875	770	685	595	505	450	370	290	225	170
				535	**50**	**1080**	**1130**	**1020**	**928**	**841**	**740**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
			24TA	27 1/16	4.83	1160	1280	1100	1000	905	800	710	615	520	465	380	300	230	175
				687	**52**	**1120**	**1230**	**1060**	**962**	**870**	**769**	**683**	**591**	**500**	**447**	**365**	**288**	**221**	**168**
1" CA	40	2*	14TA	17 1/16	6.73	1615	1695	1535	1390	1260	1115	985	855	725	645	530	420	325	240
25 mm	**131m**			**433**	**72**	**1550**	**1630**	**1480**	**1340**	**1210**	**1070**	**947**	**822**	**697**	**620**	**510**	**404**	**313**	**231**
Copper Tube			18TA	21 1/16	7.41	1780	1870	1690	1530	1390	1230	1085	945	800	710	585	460	355	265
Alum. Fins				**535**	**80**	**1710**	**1800**	**1620**	**1470**	**1340**	**1180**	**1040**	**909**	**769**	**683**	**563**	**442**	**341**	**255**
Fins 3 1/4" x 3 1/4"		2**	24TA	27 1/16	7.68	1845	1935	1750	1585	1440	1275	1125	980	830	740	610	480	370	275
83 x 83 mm				**687**	**83**	**1770**	**1860**	**1680**	**1520**	**1380**	**1230**	**1080**	**942**	**798**	**712**	**587**	**462**	**356**	**264**
Thickness .0135"			10TA	13 1/16	5.08	1220	1280	1160	1050	950	840	745	645	550	490	400	315	245	185
.34 mm				**332**	**55**	**1170**	**1230**	**1120**	**1010**	**914**	**808**	**716**	**620**	**529**	**471**	**385**	**303**	**236**	**178**
			14TA	17 1/16	5.50	1320	1385	1255	1135	1030	910	805	700	595	530	435	345	265	200
				433	**59**	**1270**	**1330**	**1210**	**1090**	**990**	**875**	**774**	**673**	**572**	**510**	**418**	**332**	**255**	**192**
		1	18TA	21 1/16	5.91	1420	1490	1350	1220	1110	980	865	750	640	570	470	370	285	215
				535	**64**	**1360**	**1430**	**1300**	**1170**	**1070**	**942**	**832**	**721**	**615**	**548**	**452**	**356**	**274**	**207**
			24TA	27 1/16	6.25	1500	1575	1425	1290	1170	1035	915	795	675	600	495	390	300	225
				687	**67**	**1440**	**1520**	**1370**	**1240**	**1120**	**995**	**880**	**764**	**649**	**577**	**476**	**375**	**288**	**216**
	50	2*	14TA	17 1/16	7.00	1680	1765	1595	1445	1310	1160	1025	890	755	670	555	435	335	250
	164 m			**433**	**75**	**1620**	**1700**	**1530**	**1390**	**1260**	**1120**	**986**	**856**	**726**	**644**	**534**	**418**	**322**	**240**
			18TA	21 1/16	8.04	1930	2025	1835	1660	1505	1330	1175	1020	870	770	635	500	385	290
				535	**87**	**1860**	**1950**	**1760**	**1600**	**1450**	**1280**	**1130**	**981**	**837**	**740**	**611**	**481**	**370**	**279**
		2**	24TA	27 1/16	8.50	2040	2140	1940	1755	1590	1410	1245	1080	920	815	675	530	410	305
				687	**91**	**1960**	**2060**	**1870**	**1690**	**1530**	**1360**	**1200**	**1040**	**885**	**784**	**649**	**510**	**394**	**293**
			10TA	13 1/16	5.54	1330	1395	1265	1145	1035	920	810	705	600	530	440	345	265	200
				332	**60**	**1280**	**1340**	**1220**	**1100**	**995**	**885**	**779**	**678**	**577**	**510**	**423**	**332**	**255**	**192**
			14TA	17 1/16	6.08	1460	1535	1385	1255	1140	1005	890	775	655	585	480	380	290	220
				433	**65**	**1400**	**1480**	**1330**	**1210**	**1100**	**966**	**856**	**745**	**630**	**563**	**462**	**365**	**279**	**212**
		1	18TA	21 1/16	6.62	1590	1670	1510	1365	1240	1095	970	840	715	635	525	415	320	240
				535	**71**	**1530**	**1610**	**1450**	**1310**	**1190**	**1050**	**933**	**808**	**688**	**611**	**505**	**399**	**308**	**231**
			24TA	27 1/16	7.12	1710	1795	1625	1470	1335	1180	1049	905	770	685	510	440	335	250
				687	**77**	**1640**	**1730**	**1560**	**1410**	**1280**	**1140**	**1000**	**870**	**740**	**659**	**490**	**423**	**322**	**240**
	58	2*	14TA	17 1/16	7.16	1720	1795	1625	1470	1335	1180	1045	905	770	685	565	445	340	255
	190 m			**433**	**77**	**1650**	**1730**	**1560**	**1410**	**1280**	**1140**	**1000**	**870**	**740**	**659**	**543**	**428**	**327**	**245**
			18TA	21 1/16	8.41	2020	2120	1920	1735	1575	1395	1230	1070	910	810	665	525	405	305
				535	**91**	**1940**	**2040**	**1850**	**1670**	**1520**	**1340**	**1180**	**1030**	**875**	**779**	**639**	**505**	**389**	**293**
		2**	24TA	27 1/16	9.04	2170	2260	2060	1865	1690	1495	1325	1150	975	870	715	565	435	325
				687	**97**	**2090**	**2170**	**1980**	**1790**	**1620**	**1440**	**1270**	**1110**	**928**	**837**	**688**	**543**	**418**	**313**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24TA high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet – TA

Table PD-21 — Ratings 4" (102 mm) Deep, Type TA - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			10TA	13 1/16	4.33	1040	1090	990	895	810	720	635	550	470	415	345	270	210	155
				332	**47**	**1000**	**1050**	**952**	**861**	**779**	**692**	**611**	**529**	**452**	**399**	**332**	**260**	**202**	**149**
			14TA	17 1/16	4.54	1090	1145	1035	935	850	750	665	580	490	435	360	285	220	165
				433	**49**	**1059**	**1100**	**995**	**899**	**817**	**721**	**639**	**558**	**471**	**418**	**346**	**274**	**212**	**159**
		1	18TA	21 1/16	4.75	1140	1195	1085	980	890	785	695	605	515	455	375	295	230	170
				535	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
			24TA	27 1/16	4.91	1180	1240	1120	1015	920	815	720	625	530	470	390	305	235	175
				687	**53**	**1140**	**1190**	**1080**	**976**	**885**	**784**	**692**	**601**	**510**	**452**	**375**	**293**	**226**	**168**
1 1/4" CA	40	2*	14TA	17 1/16	6.73	1615	1695	1535	1390	1260	1115	985	855	725	645	530	420	325	240
32 mm	**131 m**			**433**	**72**	**1550**	**1630**	**1480**	**1340**	**1210**	**1070**	**947**	**822**	**697**	**620**	**510**	**404**	**313**	**231**
Copper Tube			18TA	21 1/16	7.39	1775	1865	1685	1525	1385	1225	1080	940	800	710	585	460	355	265
Alum. Fins				**535**	**80**	**1710**	**1790**	**1620**	**1470**	**1330**	**1180**	**1049**	**904**	**769**	**683**	**563**	**442**	**341**	**255**
Fins 3 1/4" x 3 1/4"		2**	24TA	27 1/16	7.64	1835	1925	1745	1580	1430	1265	1120	970	825	735	605	475	365	275
83 x 83 mm				**687**	**82**	**1760**	**1850**	**1680**	**1520**	**1380**	**1220**	**1080**	**933**	**793**	**707**	**582**	**457**	**351**	**264**
Thickness .0135"			10TA	13 1/16	5.12	1230	1290	1170	1060	960	850	750	650	555	490	405	320	245	185
.34 mm				**332**	**55**	**1180**	**1240**	**1120**	**1020**	**923**	**817**	**721**	**625**	**534**	**471**	**389**	**308**	**236**	**178**
			14TA	17 1/16	5.58	1340	1405	1275	1150	1045	925	815	710	605	535	440	350	270	200
				433	**60**	**1290**	**1350**	**1230**	**1110**	**1000**	**889**	**784**	**683**	**582**	**514**	**423**	**337**	**260**	**192**
		1	18TA	21 1/16	6.00	1440	1510	1370	1240	1125	995	880	765	650	575	475	375	290	215
				535	**65**	**1380**	**1450**	**1320**	**1190**	**1080**	**957**	**846**	**736**	**625**	**553**	**457**	**361**	**279**	**207**
			24TA	27 1/16	6.33	1520	1595	1445	1305	1185	1050	925	805	685	610	500	395	305	230
				687	**68**	**1460**	**1530**	**1390**	**1260**	**1140**	**1010**	**889**	**774**	**659**	**587**	**481**	**380**	**293**	**221**
	50	2*	14TA	17 1/16	6.89	1655	1735	1570	1425	1290	1140	1010	875	745	660	545	430	330	250
	164 m			**433**	**74**	**1590**	**1670**	**1510**	**1370**	**1240**	**1100**	**971**	**841**	**716**	**635**	**524**	**413**	**317**	**240**
			18TA	21 1/16	7.89	1895	1990	1800	1630	1480	1310	1155	1005	850	760	625	490	380	285
				535	**85**	**1820**	**1910**	**1730**	**1570**	**1420**	**1260**	**1110**	**966**	**817**	**731**	**601**	**471**	**365**	**274**
		2**	24TA	27 1/16	8.33	2000	2100	1900	1720	1560	1380	1220	1060	900	800	660	520	400	300
				687	**90**	**1920**	**2020**	**1830**	**1650**	**1500**	**1330**	**1170**	**1020**	**865**	**769**	**635**	**500**	**385**	**288**
			10TA	13 1/16	5.54	1330	1395	1265	1145	1035	915	810	705	600	530	430	345	265	200
				332	**60**	**1280**	**1340**	**1220**	**1100**	**995**	**880**	**779**	**678**	**577**	**510**	**413**	**332**	**255**	**192**
			14TA	17 1/16	6.12	1470	1545	1395	1265	1145	1015	895	780	660	590	485	380	295	220
				433	**66**	**1410**	**1490**	**1340**	**1220**	**1100**	**976**	**861**	**750**	**635**	**567**	**466**	**365**	**284**	**212**
		1	18TA	21 1/16	6.70	1610	1690	1530	1385	1255	1110	980	855	725	645	530	420	320	240
				535	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**822**	**697**	**620**	**510**	**404**	**308**	**231**
			24TA	27 1/16	7.20	1730	1815	1645	1490	1350	1195	1055	915	780	690	570	450	345	260
				687	**78**	**1660**	**1740**	**1580**	**1430**	**1300**	**1150**	**1010**	**880**	**750**	**664**	**548**	**433**	**332**	**250**
	58	2*	14TA	17 1/16	7.00	1680	1765	1595	1445	1310	1160	1025	890	755	670	555	435	335	250
	190 m			**433**	**75**	**1620**	**1700**	**1530**	**1390**	**1260**	**1120**	**986**	**856**	**726**	**644**	**534**	**418**	**322**	**240**
			18TA	21 1/16	8.12	1950	2050	1850	1675	1520	1345	1190	1035	880	780	645	505	390	290
				535	**87**	**1880**	**1970**	**1780**	**1610**	**1460**	**1290**	**1140**	**995**	**846**	**750**	**620**	**486**	**375**	**279**
		2**	24TA	27 1/16	8.73	2095	2200	1990	1800	1635	1445	1280	1110	940	840	690	545	420	315
				687	**94**	**2020**	**2120**	**1910**	**1730**	**1570**	**1390**	**1230**	**1070**	**904**	**808**	**664**	**524**	**404**	**303**

*5 1/2" (140 mm) Centers
**9 1/2" (241 mm) Centers
All two tier and 24TA high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet – TA

Table PD-22 — Ratings 6" (152 mm) Deep, Type TA - Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
			12TA	15	6.33	1520	1595	1445	1305	1185	1050	925	805	685	610	500	395	305	230
				381	**68**	**1460**	**1530**	**1390**	**1260**	**1140**	**1010**	**889**	**774**	**659**	**587**	**481**	**380**	**293**	**221**
			16TA	19	6.50	1560	1640	1480	1340	1215	1075	950	825	700	625	515	405	310	235
				483	**70**	**1500**	**1580**	**1420**	**1290**	**1170**	**1030**	**914**	**793**	**673**	**601**	**495**	**389**	**298**	**226**
		1	20TA	23	6.70	1610	1690	1530	1385	1255	1110	980	855	725	645	530	420	320	240
				584	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**822**	**697**	**620**	**510**	**404`**	**308**	**231**
			24TA	27	6.93	1665	1750	1580	1430	1300	1150	1015	880	750	665	550	430	335	250
				686	**75**	**1600**	**1680**	**1520**	**1380**	**1250**	**1110**	**976**	**846**	**721**	**639**	**529**	**413**	**322**	**240**
1 ¼" CA	40	2*	16TA	19	10.25	2460	2585	2335	2115	1920	1695	1500	1305	1105	985	810	640	490	370
32 mm	**131 m**			**483**	**110**	**2370**	**2490**	**2240**	**2030**	**1850**	**1630**	**1440**	**1260**	**1060**	**947**	**779**	**615**	**471**	**356**
Copper Tube			20TA	23	10.89	2615	2745	2485	2250	2040	1805	1595	1385	1175	1045	860	680	525	390
Alum. Fins				**584**	**117**	**2520**	**2640**	**2390**	**2160**	**1960**	**1740**	**1530**	**1330**	**1130**	**1000**	**827**	**654**	**505**	**375**
Fins 3 ¼" x 5 ¼"		2**	24TA	27	11.29	2710	2845	2575	2330	2115	1870	1655	1435	1220	1085	895	705	540	405
83 x 133 mm				**686**	**122**	**2610**	**2740**	**2480**	**2240**	**2030**	**1800**	**1590**	**1380**	**1170**	**1040**	**861**	**678**	**519**	**389**
Thickness .0135"			12TA	15	7.95	1910	2005	1815	1640	1490	1320	1165	1010	860	765	630	495	380	285
.34 mm				**381**	**86**	**1840**	**1930**	**1740**	**1580**	**1430**	**1270**	**1120**	**971**	**827**	**736**	**606**	**476**	**365**	**274**
			16TA	19	8.41	2020	2120	1920	1735	1575	1395	1230	1070	910	810	665	525	405	305
				483	**91**	**1940**	**2040**	**1850**	**1670**	**1520**	**1340**	**1180**	**1030**	**875**	**779**	**639**	**505**	**389**	**293**
		1	20TA	23	8.91	2140	2245	2035	1840	1670	1475	1305	1135	965	855	705	555	430	320
				584	**96**	**2060**	**2160**	**1960**	**1770**	**1610**	**1420**	**1260**	**1090**	**928**	**822**	**678**	**534**	**413**	**308**
			24TA	27	9.39	2255	2370	2140	1940	1760	1555	1375	1195	1015	900	745	585	450	330
				686	**101**	**2170**	**2280**	**2060**	**1870**	**1690**	**1500**	**1320**	**1150**	**976**	**865**	**716**	**563**	**433**	**317**
	50	2*	16TA	19	10.95	2630	2760	2500	2260	2050	1815	1605	1395	1185	1050	870	685	525	395
	164 m			**483**	**118**	**2530**	**2650**	**2400**	**2170**	**1970**	**1740**	**1540**	**1340**	**1140**	**1010**	**837**	**659**	**505**	**380**
			20TA	23	12.16	2920	3065	2775	2510	2280	2015	1780	1550	1315	1170	965	760	585	440
				584	**131**	**2810**	**2950**	**2670**	**2410**	**2190**	**1940**	**1710**	**1490**	**1260**	**1120**	**928**	**731**	**563**	**423**
		2**	24TA	27	12.81	3075	3230	2920	2645	2400	2120	1875	1630	1385	1230	1015	800	615	460
				686	**138**	**2960**	**3110**	**2810**	**2540**	**2310**	**2040**	**1800**	**1570**	**1330**	**1180**	**976**	**769**	**591**	**442**
			12TA	15	8.79	2110	2215	2005	1815	1645	1455	1290	1120	950	845	695	550	420	315
				381	**95**	**2030**	**2130**	**1930**	**1740**	**1580**	**1400**	**1240**	**1080**	**914**	**813**	**668**	**529**	**404**	**303**
			16TA	19	9.45	2270	2385	2155	1950	1770	1565	1385	1205	1020	910	750	590	455	340
				483	**102**	**2180**	**2290**	**2070**	**1880**	**1700**	**1500**	**1330**	**1160**	**981**	**875**	**721**	**567**	**438**	**327**
		1	20TA	23	10.08	2420	2540	2300	2080	1890	1670	1475	1280	1090	970	800	630	485	365
				584	**109**	**2330**	**2440**	**2210**	**2000**	**1820**	**1610**	**1420**	**1230**	**1050**	**933**	**769**	**606**	**466**	**351**
			24TA	27	10.83	2600	2730	2470	2235	2030	1795	1585	1380	1170	1040	860	675	520	390
				686	**117**	**2500**	**2620**	**2380**	**2150**	**1950**	**1730**	**1520**	**1330**	**1120**	**1000**	**827**	**649**	**500**	**375**
	58	2*	16TA	19	11.33	2720	2855	2585	2340	2120	1875	1660	1440	1225	1090	900	705	545	410
	190 m			**483**	**122**	**2620**	**2740**	**2490**	**2250**	**2040**	**1800**	**1600**	**1380**	**1180**	**1050**	**865**	**678**	**524**	**394**
			20TA	23	12.87	3090	3245	2935	2655	2410	2130	1885	1640	1390	1235	1020	805	620	465
				584	**139**	**2970**	**3120**	**2820**	**2550**	**2320**	**2050**	**1810**	**1580**	**1340**	**1190**	**981**	**774**	**596**	**447**
		2**	24TA	27	13.83	3320	3485	3155	2855	2590	2290	2025	1760	1495	1330	1095	865	665	500
				686	**149**	**3190**	**3350**	**3030**	**2740**	**2490**	**2200**	**1950**	**1690**	**1440**	**1280**	**1050**	**832**	**639**	**481**

*5 ½" (140 mm) Centers
**9 ½" (241 mm) Centers
All two tier and 24TA high ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Top Outlet – TA

Table PD-23 — Ratings 6″ (152 mm) Deep, Type TA - Enclosures With Steel Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
			12TA	15 1/4	6.50	1560	1640	1480	1340	1220	1080	950	825	700	625	515	405	310	230
				387	**70**	**1500**	**1580**	**1420**	**1290**	**1170**	**1040**	**914**	**793**	**673**	**601**	**495**	**389**	**298**	**221**
			16TA	19 1/4	6.70	1610	1690	1530	1380	1260	1110	980	850	725	645	530	420	320	240
				489	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**817**	**697**	**620**	**510**	**404**	**308**	**231**
1 1/4″ Steel		1	20TA	23 1/4	6.90	1660	1740	1580	1430	1290	1150	1010	880	745	665	545	430	330	245
32 mm				**590**	**74**	**1600**	**1670**	**1520**	**1380**	**1240**	**1110**	**971**	**846**	**716**	**639**	**524**	**413**	**317**	**236**
Steel Tube			24TA	27 1/4	7.26	1740	1825	1655	1495	1355	1200	1060	920	785	695	575	450	350	260
Steel Fins				**692**	**78**	**1670**	**1760**	**1590**	**1440**	**1300**	**1150**	**1020**	**885**	**755**	**668**	**553**	**433**	**337**	**250**
Fins 2 1/2″ x 5 1/4″	52		16TA	19 1/4	9.40	2250	2360	2140	1940	1760	1550	1370	1190	1010	900	740	585	450	335
64 x 133 mm	**171 m**			**489**	**101**	**2160**	**2270**	**2060**	**1870**	**1690**	**1490**	**1320**	**1140**	**971**	**865**	**712**	**563**	**433**	**322**
Thickness .027″		2*	20TA	23 1/4	10.00	2400	2520	2280	2060	1870	1660	1460	1270	1080	960	790	625	480	360
.69 mm				**590**	**108**	**2310**	**2420**	**2190**	**1980**	**1800**	**1600**	**1400**	**1220**	**1040**	**923**	**760**	**601**	**462**	**346**
			24TA	27 1/4	10.52	2525	2650	2400	2170	1970	1740	1540	1340	1135	1010	835	655	505	380
				692	**113**	**2430**	**2550**	**2310**	**2090**	**1890**	**1670**	**1480**	**1290**	**1090**	**971**	**803**	**630**	**486**	**365**
			20TA	23 1/4	10.40	2490	2610	2370	2140	1940	1720	1520	1320	1120	995	820	645	495	370
				590	**112**	**2390**	**2510**	**2280**	**2060**	**1870**	**1650**	**1460**	**1270**	**1080**	**957**	**789**	**620**	**476**	**356**
		2*	24TA	27 1/4	10.94	2625	2755	2495	2260	2050	1810	1600	1390	1180	1050	865	685	525	395
				692	**118**	**2520**	**2650**	**2400**	**2170**	**1970**	**1740**	**1540**	**1340**	**1140**	**1010**	**832**	**659**	**505**	**380**

*4″ (102 mm) Centers
**8″ (203 mm) Centers
24TA High ratings not IBR approved.
Dimensions in **bold** indicate metric units.

Performance Data

Table PD-24 — Ratings, Type 3E and E3 Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
3/4″ CA			3E	9 1/8	3.64	875	920	830	750	680	600	535	465	395	350	290	230	175	130
19 mm				**232**	**39**	**841**	**885**	**798**	**721**	**654**	**577**	**514**	**447**	**380**	**337**	**279**	**221**	**168**	**125**
Copper Tube	40	1	E3*	9 3/16	4.04	970	1020	920	835	755	670	590	515	435	390	320	250	195	145
Alum. Fins	**131 m**			**233**	**43**	**933**	**981**	**885**	**803**	**726**	**644**	**567**	**495**	**418**	**375**	**308**	**240**	**188**	**139**
Fins 3 1/4″ x 3 1/4″			3E	9 1/8	4.04	970	1020	920	835	755	670	590	515	435	390	320	250	195	145
83 x 83 mm				**232**	**43**	**933**	**981**	**885**	**803**	**726**	**644**	**567**	**495**	**418**	**375**	**308**	**240**	**188**	**139**
Thickness .0135″	50	1	E3*	9 3/16	4.48	1075	1130	1020	925	840	740	655	570	485	430	355	280	215	160
.34 mm	**164 m**			**233**	**48**	**1030**	**1090**	**981**	**889**	**808**	**712**	**630**	**548**	**466**	**413**	**341**	**269**	**207**	**154**
			3E	9 1/8	4.27	1025	1075	975	880	800	710	625	545	460	410	340	265	205	155
				232	**46**	**986**	**1030**	**938**	**846**	**769**	**683**	**601**	**524**	**442**	**394**	**327**	**255**	**197**	**149**
	58	1	E3*	9 3/16	4.75	1140	1200	1085	980	890	785	695	605	515	455	375	295	230	170
	190 m			**233**	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
1″ CA			3E	9 1/8	3.64	875	920	830	750	680	605	535	465	395	350	290	230	175	130
25 mm				**232**	**39**	**841**	**885**	**798**	**721**	**654**	**582**	**514**	**447**	**380**	**337**	**279**	**221**	**168**	**125**
Copper Tube	40	1	E3*	9 3/16	4.04	970	1020	920	835	755	670	590	515	435	390	320	250	195	145
Alum. Fins	**131 m**			**233**	**43**	**933**	**981**	**885**	**803**	**726**	**644**	**567**	**495**	**418**	**375**	**308**	**240**	**188**	**139**
Fins 3 1/4″ x 3 1/4″			3E	9 1/8	4.00	960	1010	910	825	750	660	585	510	430	385	315	250	190	145
83 x 83 mm				**232**	**43**	**923**	**971**	**875**	**793**	**721**	**635**	**563**	**490**	**413**	**370**	**303**	**240**	**183**	**139**
Thickness .0135″	50	1	E3*	9 3/16	4.43	1065	1120	1010	915	830	735	650	565	480	425	350	275	215	160
.34 mm	**164 m**			**233**	**48**	**1020**	**1080**	**871**	**880**	**798**	**707**	**625**	**543**	**462**	**409**	**337**	**264**	**207**	**154**
			3E	9 1/8	4.20	1010	1060	960	870	790	700	615	535	455	405	335	265	200	150
				232	**45**	**971**	**1020**	**923**	**837**	**760**	**673**	**591**	**514**	**438**	**389**	**322**	**255**	**192**	**144**
	58	1	E3*	9 3/16	4.66	1120	1175	1065	965	875	775	685	595	505	450	370	290	225	170
	190 m			**233**	**50**	**1080**	**1130**	**1020**	**928**	**841**	**745**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
1 1/4″ CA			3E	9 1/8	3.68	885	930	840	760	690	610	540	470	400	355	290	230	180	130
32 mm				**232**	**40**	**851**	**894**	**808**	**731**	**664**	**587**	**519**	**452**	**385**	**341**	**279**	**221**	**173**	**125**
Copper Tube	40	1	E3*	9 3/16	4.08	980	1030	930	840	765	675	600	520	440	390	325	255	195	145
Alum. Fins	**131 m**			**233**	**44**	**942**	**990**	**894**	**808**	**736**	**649**	**577**	**500**	**423**	**375**	**313**	**245**	**188**	**139**
Fins 3 1/4″ x 3 1/4″			3E	9 1/8	4.00	960	1010	910	825	750	660	585	510	430	385	315	250	190	145
83 x 83 mm				**232**	**43**	**923**	**971**	**875**	**793**	**721**	**635**	**563**	**490**	**413**	**370**	**303**	**240**	**183**	**139**
Thickness .0135″	50	1	E3*	9 3/16	4.43	1065	1120	1010	915	830	735	650	565	480	425	350	275	215	160
.34 mm	**164 m**			**233**	**48**	**1020**	**1080**	**971**	**880**	**798**	**707**	**625**	**543**	**462**	**409**	**337**	**264**	**207**	**154**
			3E	9 1/8	4.16	1000	1050	950	860	780	690	610	530	450	400	330	260	200	150
				232	**45**	**962**	**1010**	**914**	**827**	**750**	**664**	**587**	**510**	**433**	**385**	**317**	**250**	**192**	**144**
	58	1	E3*	9 3/16	4.61	1110	1165	1055	955	865	765	680	590	500	445	365	290	220	165
	190 m			**233**	**50**	**1070**	**1120**	**1010**	**918**	**832**	**736**	**654**	**567**	**481**	**428**	**351**	**279**	**212**	**159**

*IBR does not have procedure for rating pedestal mounted enclosures.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

Performance Data

Table PD-25 — Ratings, Type 4E, E3 and E3-2W Enclosures With Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** IBR Factor — Steam to Hot Water 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
							220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
1 1/4" CA		1	4E	9 1/8	5.41	1300	1365	1235	1120	1015	895	795	690	585	520	430	340	260	195
32 mm				**232**	**58**	**1250**	**1310**	**1190**	**1080**	**976**	**861**	**764**	**664**	**563**	**50**	**413**	**327**	**250**	**188**
Copper Tube	40	1	E3	9 3/16	5.95	1430	1500	1360	1230	1115	985	870	760	645	570	470	370	285	215
Alum. Fins	**131 m**			**233**	**64**	**1380**	**1440**	**1310**	**1180**	**1070**	**847**	**837**	**731**	**620**	**548**	**452**	**356**	**274**	**207**
Fins 3 1/4" x 5 1/4"		2	E3-2W	8 15/16	10.70	2570	2700	2440	2210	2005	1775	1570	1360	1155	1030	850	670	515	385
83 x 133 mm				**227**	**115**	**2470**	**2600**	**2350**	**2120**	**1930**	**1710**	**1510**	**1310**	**1110**	**990**	**817**	**644**	**495**	**370**
Thickness .015"		1	4E	9 1/8	6.10	1465	1540	1390	1260	1140	1010	895	775	660	585	485	380	295	220
.38 mm				**232**	**66**	**1410**	**1480**	**1340**	**1210**	**1100**	**971**	**861**	**745**	**635**	**563**	**466**	**365**	**284**	**212**
	50	1	E3*	9 3/16	6.70	1610	1690	1530	1385	1255	1110	980	855	725	645	530	420	320	240
				233	**72**	**1550**	**1620**	**1470**	**1330**	**1210**	**1070**	**942**	**822**	**697**	**620**	**510**	**404**	**308**	**231**
	164 m	2	E3-2W	8 15/16	12.08	2900	3045	2755	2495	2260	2000	1770	1535	1305	1160	955	755	580	435
				227	**130**	**2790**	**2930**	**2650**	**2400**	**2170**	**1920**	**1700**	**1480**	**1260**	**1120**	**918**	**726**	**558**	**418**
		1	4E	9 1/8	6.45	1550	1630	1470	1335	1210	1070	945	820	700	620	510	405	310	230
				232	**69**	**1490**	**1570**	**1410**	**1280**	**1160**	**1030**	**909**	**789**	**673**	**596**	**490**	**389**	**298**	**221**
	58	1	E3*	9 3/16	7.08	1700	1785	1615	1460	1325	1175	1035	900	765	680	560	440	340	255
	190 m			**233**	**76**	**1640**	**1720**	**1550**	**1400**	**1270**	**1130**	**995**	**865**	**736**	**654**	**538**	**423**	**327**	**245**
		2	E3-2W	8 15/16	12.79	3070	3225	2915	2640	2395	2120	1870	1625	1380	1230	1015	800	615	460
				227	**138**	**2950**	**3100**	**2800**	**2540**	**2300**	**2040**	**1800**	**1560**	**1330**	**1180**	**976**	**769**	**591**	**442**
1 1/4" Steel		1	4E	9 1/8	4.90	1170	1230	1110	1010	910	810	710	620	525	465	385	305	235	175
32 mm				**232**	**53**	**1120**	**1180**	**1070**	**971**	**875**	**779**	**683**	**596**	**505**	**447**	**370**	**293**	**226**	**168**
Steel Tube	52	1	E3*	9 3/16	5.40	1290	1350	1230	1110	1010	890	790	685	580	515	425	335	255	190
Steel Fins	**171 m**			**233**	**58**	**1240**	**1300**	**1180**	**1070**	**971**	**856**	**760**	**659**	**558**	**495**	**409**	**322**	**245**	**183**
Fins 2 1/2" x 5 1/4"		2	E3-2W*	8 15/16	9.70	2320	2430	2210	2000	1820	1600	1420	1230	1045	925	765	600	465	345
64 x 133 mm				**227**	**104**	**2230**	**2340**	**2120**	**1920**	**1750**	**1540**	**1360**	**1180**	**1000**	**889**	**736**	**577**	**447**	**332**
Thickness .027"																			
.69 mm																			

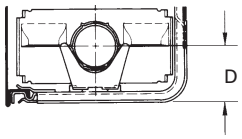
*IBR does not have procedure for rating pedestal mounted enclosures.
Dimensions in **bold** indicate metric units.

NOTE: Rating is Btu/hr/ft (Watts/meter) of finned length (for element dimensions see page 49). Hot water ratings determined by applying correction factor to steam ratings, are for water velocities of 3 ft/sec (.91 m/s) or greater. See page 9, Chart S-1 for correction factors for water velocities other than 3 ft/sec (.91 m/s). For definition of installed height and heating effect factors, see page 11. For heating ratings at other steam pressures and/or entering air temperatures, see page 10, Table S-2.

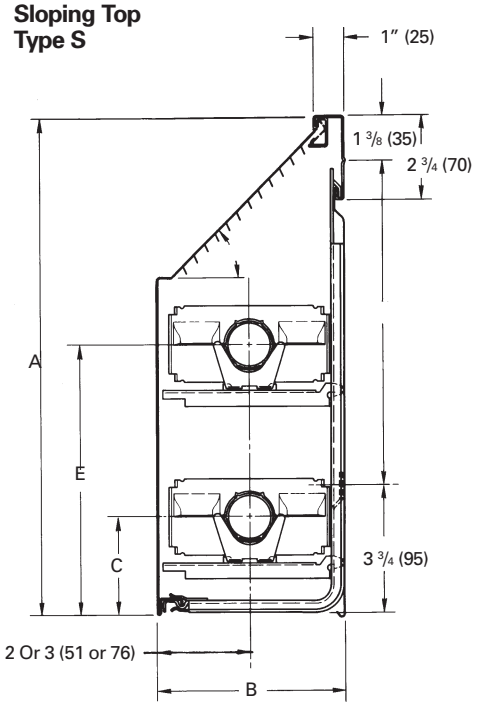
Dimensional Data

Sloping Top

Element Location For Hot Water Systems



Sloping Top Type S



Dimensions shown in ( ) are in millimeters.

Table DD-1 — Type S — Enclosure Dimensions

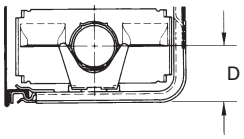
Enclosure Depth	4" (102)								6" (152)							
Fin Size	3 1/4" x 3 1/4" (83 x 83) Alum.								3 1/4" x 5 1/4" (83 x 133) Alum.				2 1/2" x 5 1/4" (64 x 133) Steel			
Tube Size	3/4" (19) Cu.				1" (25) Cu.				1 1/4" (32) Cu.				1 1/4" (32) Cu.				1 1/4" Steel			
A	10" (254)	14" (356)	18" (457)	24" (610)	10" (254)	14" (356)	18" (457)	24" (610)	10" (254)	14" (356)	18" (457)	24" (610)	12" (305)	16" (406)	20" (508)	24" (610)	12" (305)	16" (406)	20" (508)	24" (610)
B	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	4" (102)	6" (152)	6" (152)	6" (152)	6" (152)	6" (152)	6" (152)	6" (152)	6" (152)
C Min.	2 1/4" (57)	2 1/4" (57)	2 1/4" (57)	2 1/4" (57)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)
Max.	4 1/4" (108)	4 1/4" (108)	4 1/4" (108)	4 1/4" (108)	4 1/2" (114)	4 1/2" (114)	4 1/2" (114)	4 1/2" (114)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	4 3/4" (121)	3 7/8" (98)	3 7/8" (98)	3 7/8" (98)	3 7/8" (98)
D	2 1/4" (57)	2 1/4" (57)	2 1/4" (57)	2 1/4" (57)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)	2 1/2" (64)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2 3/4" (70)	2" (51)	2" (51)	2" (51)	2" (51)
E Min.	— —	6 1/4" (159)	10 1/4" (260)	10 1/4" (260)	— —	6 1/2" (165)	10 1/2" (267)	10 1/2" (267)	— —	6 3/4" (171)	10 3/4" (273)	10 3/4" (273)	— —	6 3/4" (171)	10 3/4" (273)	10 3/4" (273)	— —	6 1/2" (165)	10 1/2" (267)	10 1/2" (267)
Max.	— —	7 3/4" (197)	11 3/4" (298)	11 3/4" (298)	— —	8" (203)	12" (305)	12" (305)	— —	8 1/4" (210)	12 1/4" (57)	12 1/4" (57)	— —	8 1/4" (210)	12 1/4" (57)	12 1/4" (57)	— —	7 7/8" (200)	11 7/8" (302)	11 7/8" (302)
F	4 7/8" (124)	8 7/8" (225)	12 7/8" (327)	18 7/8" (479)	4 7/8" (124)	8 7/8" (225)	12 7/8" (327)	18 7/8" (479)	4 7/8" (124)	8 7/8" (225)	12 7/8" (327)	18 7/8" (479)	6 3/4" (171)	10 3/4" (273)	14 3/4" (121)	18 3/4" (476)	6 3/4" (171)	10 3/4" (273)	14 3/4" (121)	18 3/4" (476)

NOTE: Enclosures available in 16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel, cleaned and phosphatized to prevent corrosion and rust creep from scratches, finished in baked, standard prime enamel finish. Also available in choice of six baked enamel finish colors.

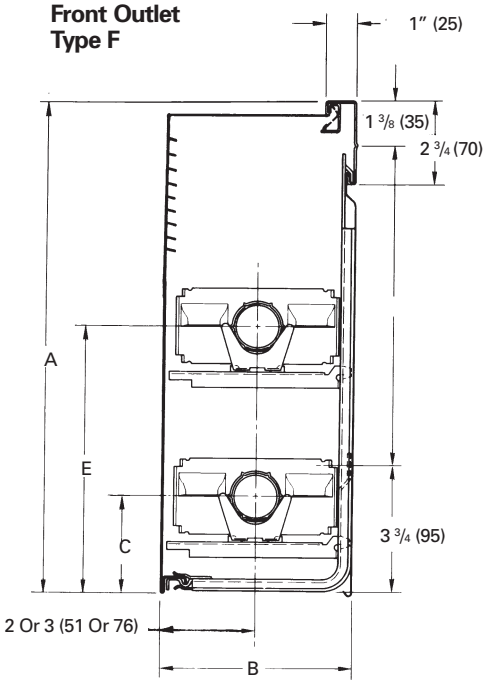
Dimensional Data

Front Outlet

Element Location For Hot Water Systems



Front Outlet Type F



Dimensions shown in ( ) are in millimeters.

Table DD-2 — Type F — Enclosure Dimensions

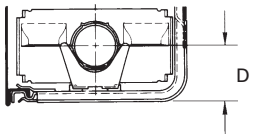
Enclosure Depth	4″ (102)												6″ (152)							
Fin Size	3 1/4″ x 3 1/4″ (83 x 83) Alum.												3 1/4″ x 5 1/4″ (83 x 133) Alum.				2 1/2″ x 5 1/4″ (64 x 133) Steel			
Tube Size	3/4″ (19) Cu.				1″ (25) Cu.				1 1/4″ (32) Cu.				1 1/4″ (32) Cu.				1 1/4″ Steel			
A	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)
B	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)
C Min.	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)
Max.	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)
D	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2″ (51)	2″ (51)	2″ (51)	2″ (51)
E Min.	— (—)	6 1/4″ (159)	10 1/4″ (260)	10 1/4″ (260)	— (—)	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)	— (—)	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— (—)	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— (—)	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)
Max.	— (—)	7 3/4″ (197)	11 3/4″ (298)	11 3/4″ (298)	— (—)	8″ (203)	12″ (305)	12″ (305)	— (—)	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— (—)	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— (—)	7 7/8″ (200)	11 7/8″ (302)	11 7/8″ (302)
F	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)

NOTE: Enclosures available in 16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel, cleaned and phosphatized to prevent corrosion and rust creep from scratches, finished in baked, standard prime enamel finish. Also available in choice of six baked enamel finish colors.

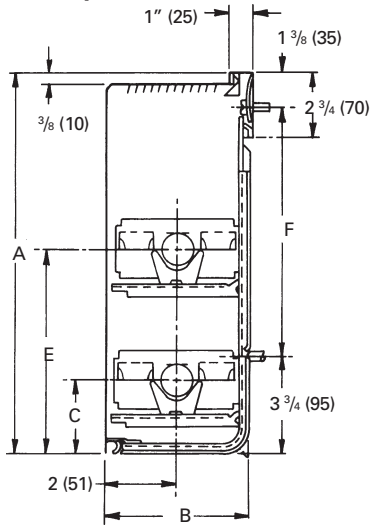
Dimensional Data

Top Outlet

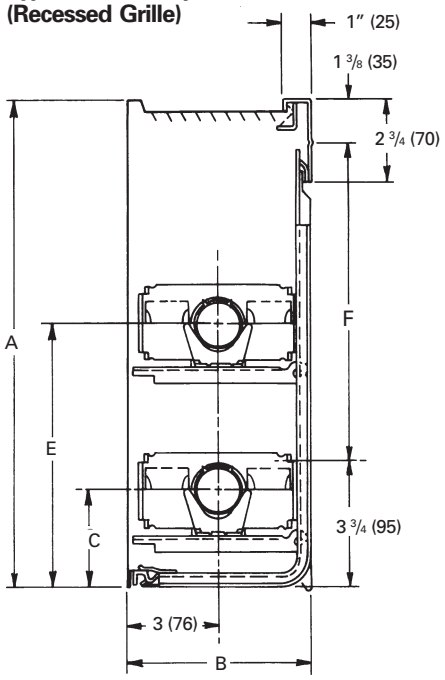
Element Location For Hot Water Systems



Top Outlet Type T — 4″ Deep (Flat Top)



Top Outlet Type T — 6″ Deep (Recessed Grille)



Dimensions shown in ( ) are in millimeters.

Table DD-3 — Type T — Enclosure Dimensions

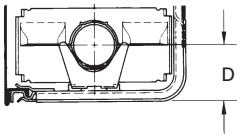
Enclosure Depth	4″ (102)								6″ (152)							
Fin Size	3 1/4″ x 3 1/4″ (83 x 83) Alum.								3 1/4″ x 5 1/4″ (83 x 133) Alum.				2 1/2″ x 5 1/4″ (64 x 133) Steel			
Tube Size	3/4″ (19) Cu.				1″ (25) Cu.				1 1/4″ (32) Cu.				1 1/4″ (32) Cu.				1 1/4″ Steel			
A	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)
B	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)
C Min.	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)
Max.	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)
D	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2″ (51)	2″ (51)	2″ (51)	2″ (51)
E Min.	— —	6 1/4″ (159)	10 1/4″ (260)	10 1/4″ (260)	— —	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)	— —	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— —	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— —	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)
Max.	— —	7 3/4″ (197)	11 3/4″ (298)	11 3/4″ (298)	— —	8″ (203)	12″ (305)	12″ (305)	— —	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— —	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— —	7 7/8″ (200)	11 7/8″ (302)	11 7/8″ (302)
F	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)

NOTE: Enclosures available in 16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel, cleaned and phosphatized to prevent corrosion and rust creep from scratches, finished in baked, standard prime enamel finish. Also available in choice of six baked enamel finish colors.

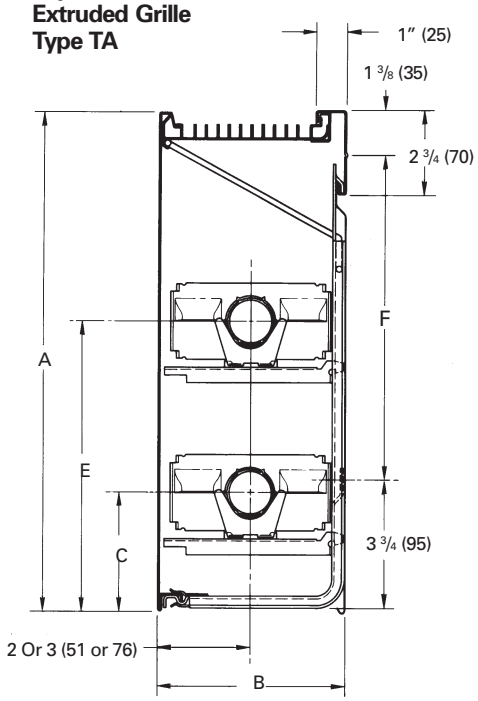
Dimensional Data

Top Outlet – TA

Element Location For Hot Water Systems



Top Outlet Extruded Grille Type TA



Dimensions shown in ( ) are in millimeters.

Table DD-4 — Type TA — Enclosure Dimensions

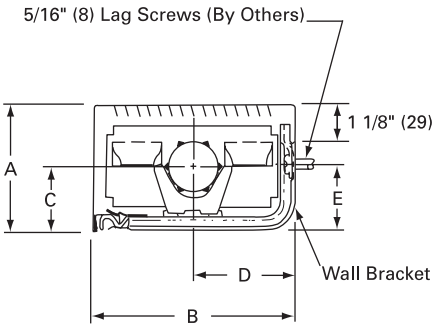
Enclosure Depth	4″ (102)												6″ (152)							
Fin Size	3 1/4″ x 3 1/4″ (83 x 83) Alum.												3 1/4″ x 5 1/4″ (83 x 133) Alum.				2 1/2″ x 5 1/4″ (64 x 133) Steel			
Tube Size	3/4″ (19) Cu.				1″ (25) Cu.				1 1/4″ (32) Cu.				1 1/4″ (32) Cu.				1 1/4″ Steel			
A	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	10″ (254)	14″ (356)	18″ (457)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)	12″ (305)	16″ (406)	20″ (508)	24″ (610)
B	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	4″ (102)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)	6″ (152)
C Min.	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)
Max.	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/4″ (108)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 1/2″ (114)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	4 3/4″ (121)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)
D	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/4″ (57)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2 3/4″ (70)	2″ (51)	2″ (51)	2″ (51)	2″ (51)
E Min.	— —	6 1/4″ (159)	10 1/4″ (260)	10 1/4″ (260)	— —	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)	— —	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— —	6 3/4″ (171)	10 3/4″ (273)	10 3/4″ (273)	— —	6 1/2″ (165)	10 1/2″ (267)	10 1/2″ (267)
Max.	— —	7 3/4″ (197)	11 3/4″ (298)	11 3/4″ (298)	— —	8″ (203)	12″ (305)	12″ (305)	— —	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— —	8 1/4″ (210)	12 1/4″ (57)	12 1/4″ (57)	— —	7 7/8″ (200)	11 7/8″ (302)	11 7/8″ (302)
F	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	4 7/8″ (124)	8 7/8″ (225)	12 7/8″ (327)	18 7/8″ (479)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)	6 3/4″ (171)	10 3/4″ (273)	14 3/4″ (121)	18 3/4″ (476)

NOTE: Enclosures available in 16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel, cleaned and phosphatized to prevent corrosion and rust creep from scratches, finished in baked, standard prime enamel finish. Also available in choice of six baked enamel finish colors.

Dimensional Data

Type — E, E3 And E3-2W Dimensions

Wall Mounted

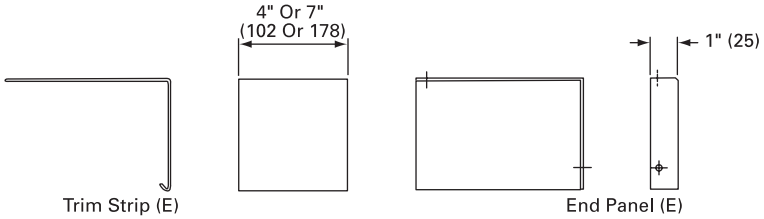


Floor Mounted

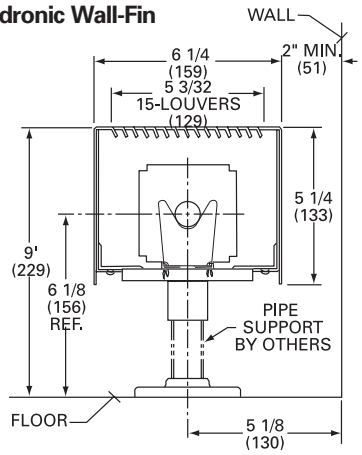
Wall Mounted

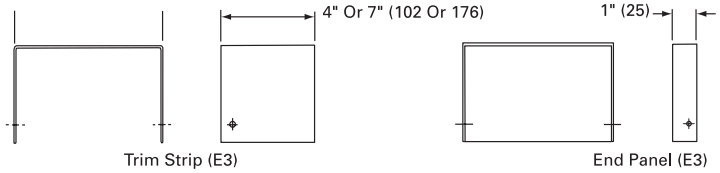
Table DD-5 — Enclosure Dimensions, Type E

Enclosure Type	3E			4E	
Fin Size		3 1/4″ x 3 1/4″ (83 x 83) Alum.		3 1/4″ x 5 1/4″ (83 x 133) Alum.	2 1/2″ x 5 1/4″ (64 x 133) Steel
Tube Size	3/4″ (19) Cu.	1″ (25) Cu.	1 1/4″ (32) Cu.	1 1/4″ (32) Cu.	1 1/4″ (32) Steel
A	5 1/8″ (130)	5 1/8″ (130)	5 1/8″ (130)	5 1/8″ (130)	5 1/8″ (130)
B	4″ (102)	4″ (102)	4″ (102)	6″ (152)	6″ (152)
C	2 3/8″ (60)	2 1/2″ (64)	2 5/8″ (67)	2 5/8″ (67)	2″ (51)
D	2″ (51)	2″ (51)	2″ (51)	3″ (76)	3″ (76)
E	3 1/4″ (83)	3 1/4″ (83)	3 1/4″ (83)	3 1/4″ (83)	3 1/4″ (83)

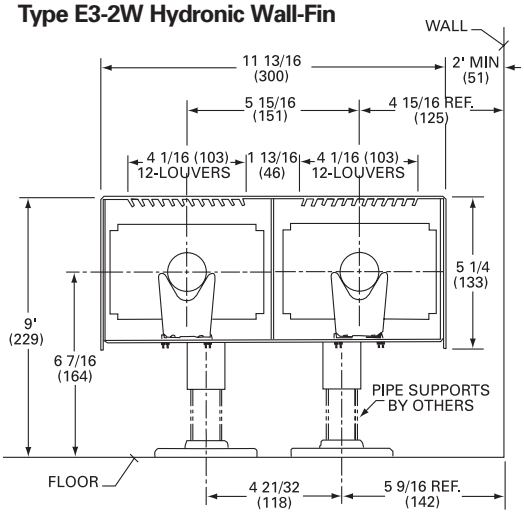


Type E3 Hydronic Wall-Fin





Type E3-2W Hydronic Wall-Fin



NOTE: Types E3 and E3-2W available in 16-gauge (1.5 mm thickness) only. Types 3E and 4E available in 16- gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness). All enclosures are cleaned and phosphatized to prevent corrosion and rust creep from scratches, finished in baked standard prime enamel finish. Also available in choice of six baked enamel finish colors.

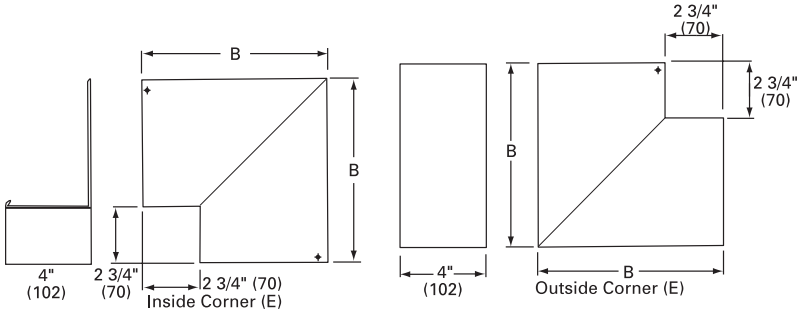


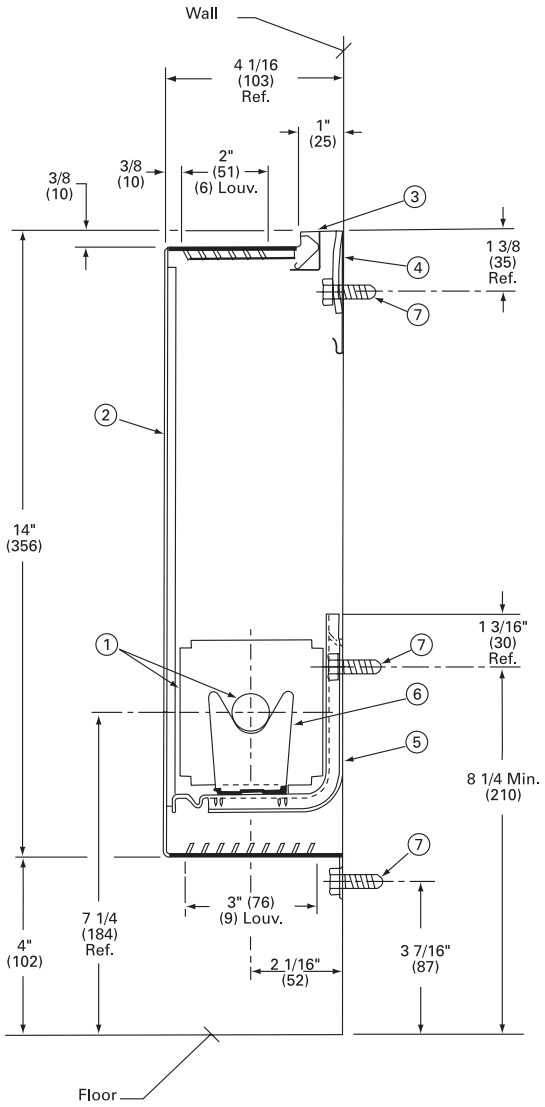
Table DD-6 — Inside and Outside Corners

Dimension	3E	4E	E3	E3-2W 5 1/4″ (133) Fin
B	6 7/8″ (175)	8 7/8″ (225)	9 1/8″ (232)	14 11/16″ (373)

Dimensions shown in ( ) are in millimeters.

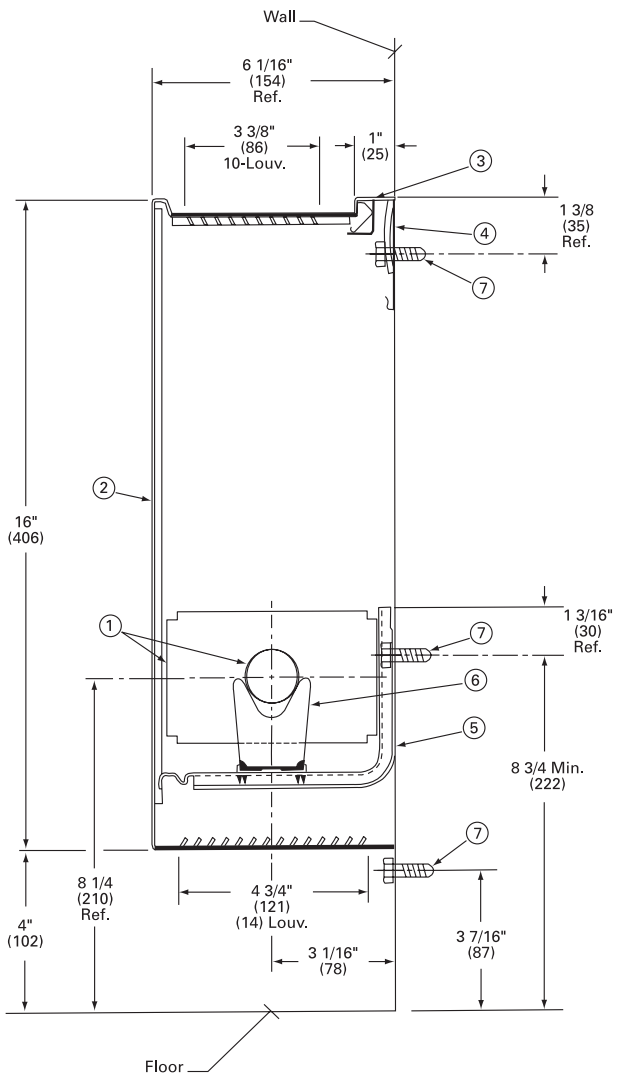
Dimensional Data

Bottom Air Inlet Grille



Type T — 4″ Deep x 14″ High Top Outlet Enclosure with Bottom Inlet Grille shown.

1. Heating Element with 3 1/4″ x 3 1/4″ size fins.
2. Front Panel with stamped sheet metal Bottom Air Inlet Grille.
3. Mounting Strip.
4. Mounting Strip Support Washer.
5. Type 4X Wall Bracket.
6. Element Cradle.
7. Mounting Fasteners by others.



Type T — 6″ Deep x 16″ High Top Outlet Enclosure with Bottom Inlet Grille shown.

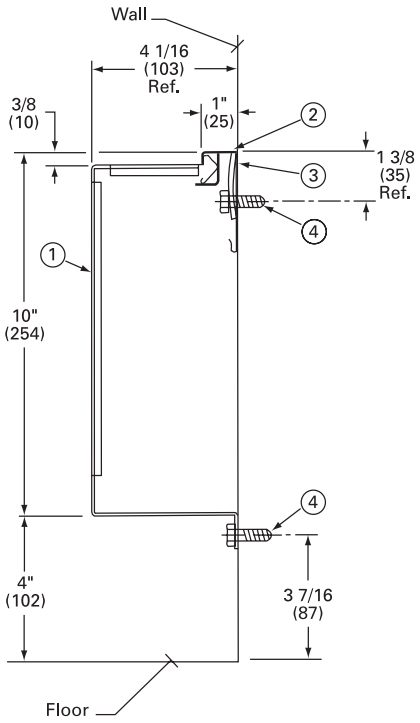
1. Heating Element with 3 1/4″ x 5 1/4″ size fins.
2. Front Panel with stamped sheet metal Bottom Air Inlet Grille.
3. Mounting Strip.
4. Mounting Strip Support Washer.
5. Type 5X Wall Bracket.
6. Element Cradle.
7. Mounting Fasteners by others.

Note: For capacity ratings, see pages 16-35 and Tables PD-4--PD-23, use correction factor of 0.90.

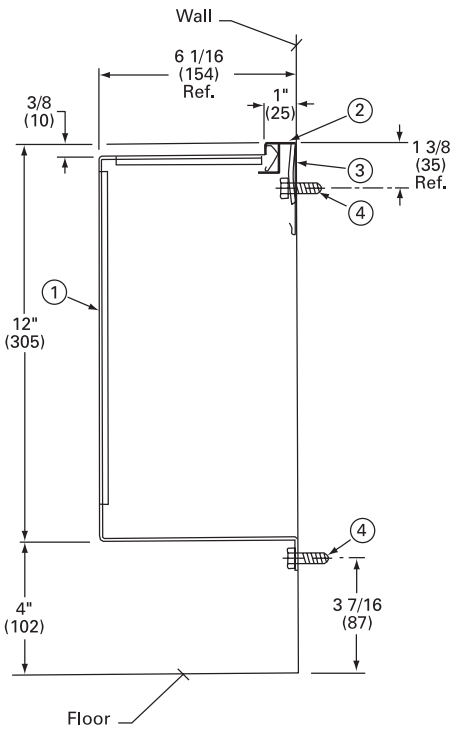
Dimensional Data

Pipe Enclosures

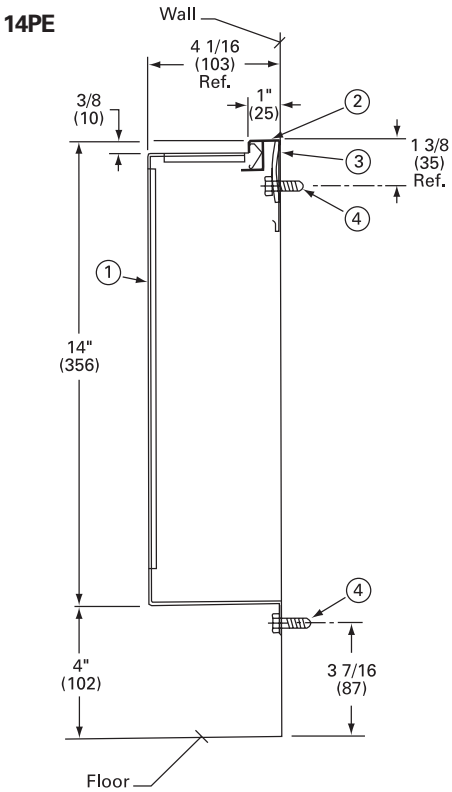
10PE



12PE



14PE

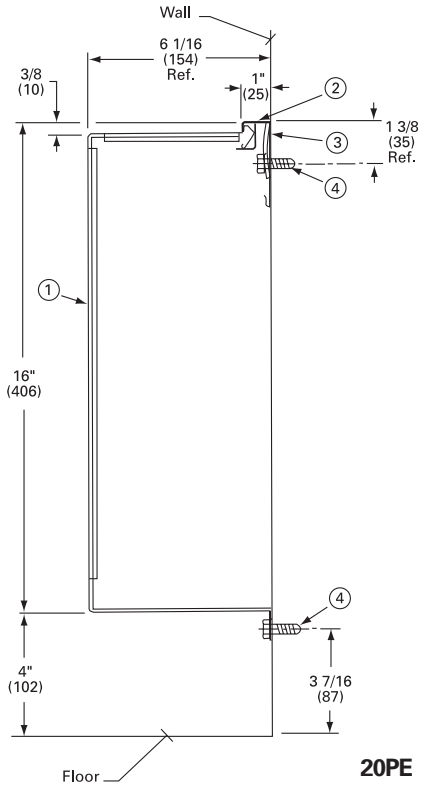


1. Enclosure
2. Mounting Strip
3. Mounting Washer
4. Fasteners by Others

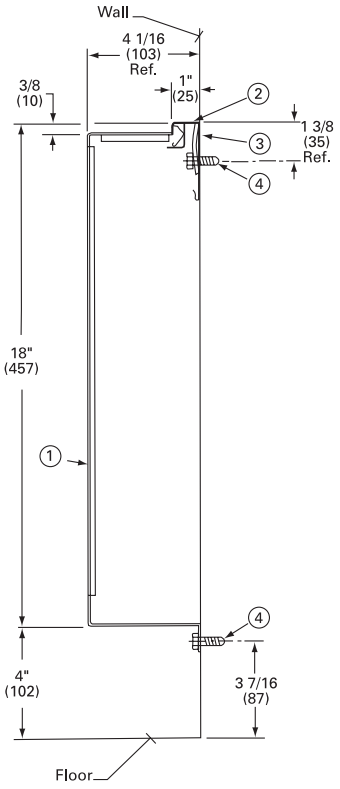
Dimensional Data

Pipe Enclosures

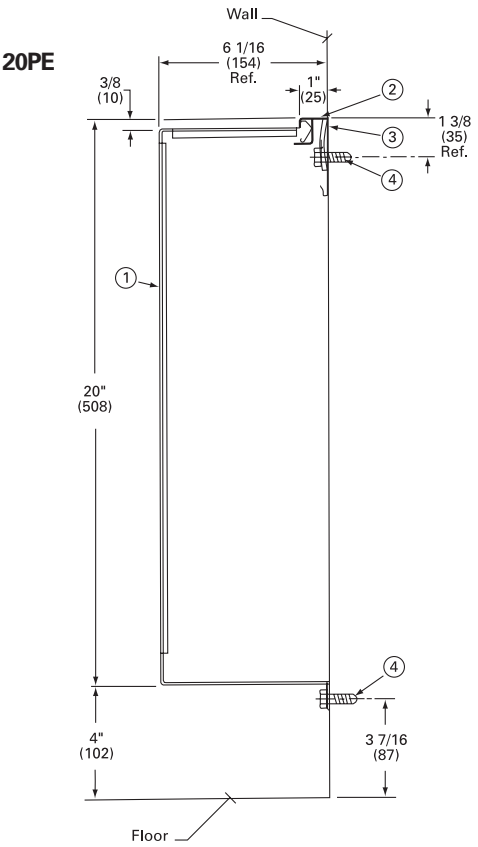
16PE



18PE

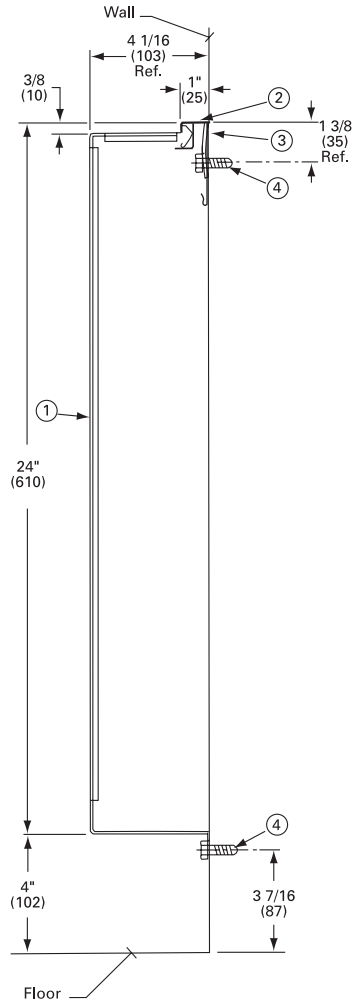


20PE

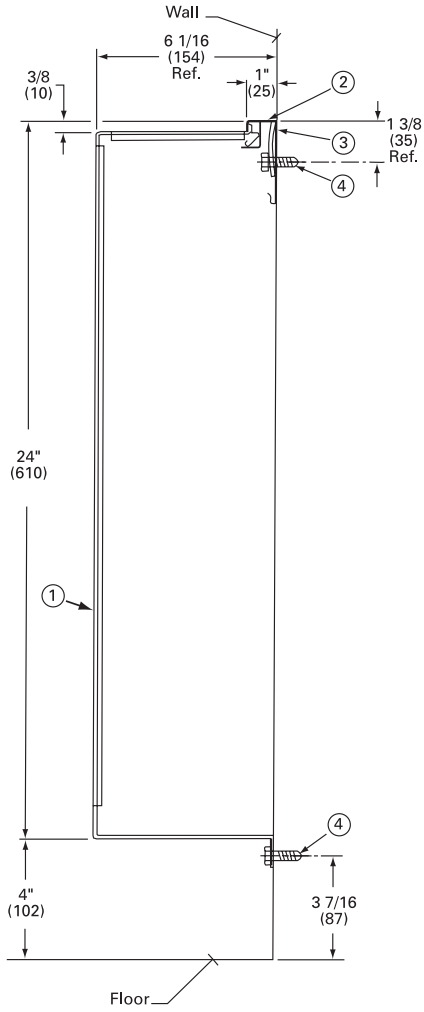


1. Enclosure
2. Mounting Strip
3. Mounting Washer
4. Fasteners by Others

24PE



24PE



1. Enclosure
2. Mounting Strip
3. Mounting Washer
4. Fasteners by Others

Dimensional Data

Element, Enclosure And Cover Length — General
The over-all length of an enclosure or cover, or of several joined together, is the same as the ordering length. Over- all length when an end panel is used is 1″ (25 mm) longer than the ordering length. Over-all length when right and left end panels are used is 2″ (51 mm) longer than the ordering length.

For wall-to-wall installations, use total length to the nearest 6″ (152 mm) increment below the actual wall-to-wall measurement. Enclosure extensions telescope up to 4″ (102 mm) to meet the wall. Access panels (6″ (152 mm) or 12″ (305 mm)) and 12″ (305 mm) access panels with 5″ x 6″ (127 x 152 mm) size access door centered, provide easy access to valves and fittings and can be used for 6″ (152 mm) or 12″ (305 mm) runs to the wall.

¾″ CA (19 mm) copper-aluminum elements are available in lengths of 1′ (.305 m) through 8′ (2.4 m) in 6″ (0.15 m) increments. 1 ¼″ (32 mm) steel or 1″ (25 mm) and 1 ¼″ (32 mm) copper-aluminum elements are available in lengths of 1′ (.305 m) through 12′ (3.7 m) in 6″ (0.15 m) increments. Cabinets are available in lengths of 2′ (.61 m) through 8′ (2.4 m) in 6″ (0.15 m) increments. Type X covers in lengths of 2′ (.61 m) through 8′ (2.4 m) in 6″ (0.15 m) increments, 24″ (610 mm) high cabinets in lengths of 2′ (.61 m) through 8′ (2.4 m) in 6″ (0.15 m) increments.

Elements
Assume an 18′ (5.5 m) of 1 ¼″ (32 mm) steel, Series 52 element is required for capacity needed. Unions will be used for joining sections of the element along with supply and return connections at the ends. Two 9′ (2.7 m) lengths of element will be required, with one joint between them. Total length of the installed assembly will be: 18′ (5.5 m) (element length) + union joint + lengths of supply and return connections.

Enclosures
With elements selected to meet capacity needs, assume enclosures will be selected to cover elements and piping connections required. Since enclosures are available in 6″ (0.15 m) increments, 19′ (2.7 m) will be used to cover the above assembly. Two 6 ½′ (2 m) and one 6′ (1.8 m) enclosure, 6 brackets (2 per enclosure or 1 every three feet (.9m) will be required. The overall length, including right and left end panels, is 19′ (2.7 m) + 2″ (.05 m) = 19′ 2″ (2.75 m).

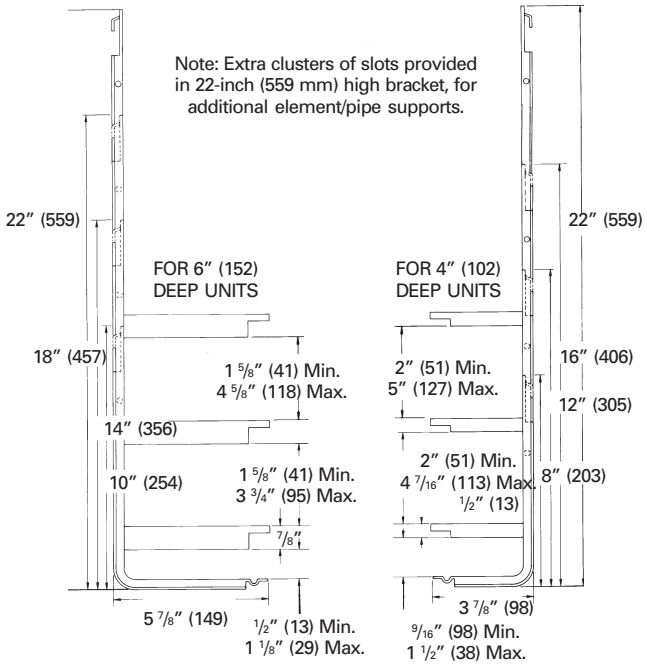
Wall-To-Wall Installations
To make a wall-to-wall installation with a total length of 20′ 4 ½″ (6.2 m), the enclosure selection would change. In addition to 20′ (6.1 m) of enclosure, two 5″ (127 mm) enclosure extensions would be required to accommodate the odd 4 ½″ (114 mm) dimension. Four 5′ (1.5 m) enclosures and eight enclosure brackets would be needed.

Type X Covers And Type E Covers
Type X or Type E covers are normally specified to cover only the heating elements. For an 18′ (5.5 m) of element, three 6′ (1.8 m) lengths of Type X or Type E covers would be necessary. Type X and Type E covers are supported at the back and bottom front by wall brackets.

Dimensional Data

Standard Cabinet And Element Mounting Locations

Figure DD-1 — Element and Pipe Support Spacing



For use with 1 1/4″ OD copper, 3 1/4″ x 5 1/4″ size aluminum fins and 1 1/4″ OD steel tube, 2 1/2″ x 5 1/4″ steel fins.

For use with 3/4″, 1″ & 1 1/4″ OD copper tube, 3 1/4″ x 3 1/4″ size aluminum fin elements.

Figure DD-2 — 4″ (102 mm) Deep Enclosures

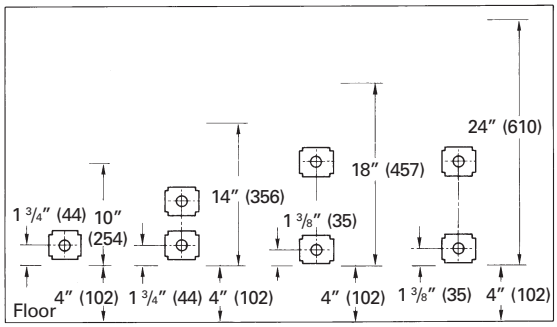


Figure DD-3 — 6″ (152 mm) Deep Enclosures

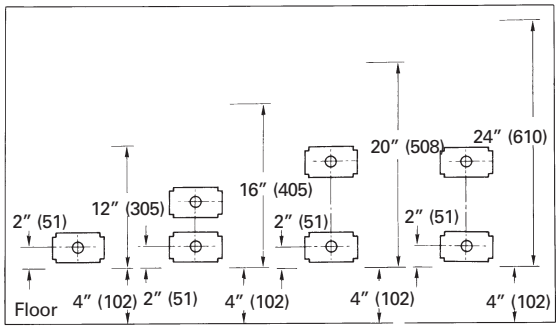
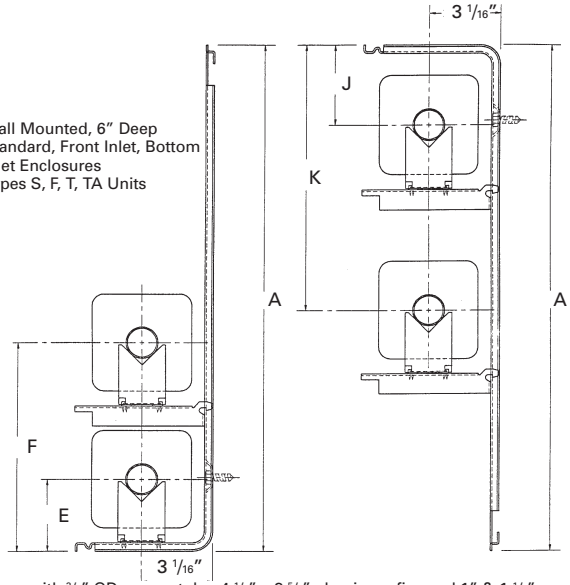


Figure DD-4 — 6″ (152 mm) Deep Enclosures

Wall Mounted, 6″ Deep
Standard, Front Inlet, Bottom Inlet Enclosures
Types S, F, T, TA Units



For use with 3/4″ OD copper tube, 4 1/4″ x 3 5/8″ aluminum fins and 1″ & 1 1/4″ OD copper tube, 4 1/4″ x 4 1/4″ aluminum fins and 1 1/4″ OD steel tube, 4 1/4″ x 4 1/4″ steel fins.

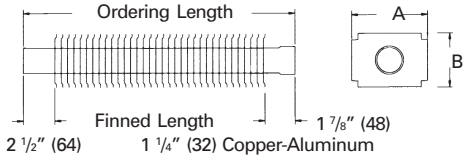
Wall Mounted , — Inverted, 6″ Deep
Standard Enclosures
Type S, F, T
(Type TA Not Available)

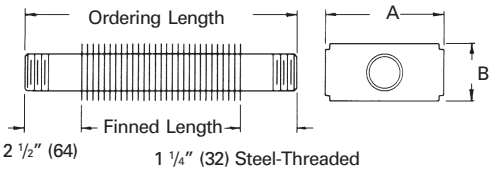
Enclosure		Tube		F		J		K	
Height	A	Size	E	Min.	Max.	Min.	Max.	Min.	Max.
12″ (305)	10″ (254)								
16″ (406)	14″ (356)	3/4 CA	2 13/16	8 3/16 (208)	8 3/16 (224)	2 5/16	3 13/16	N/A	N/A
20″ (508)	18″ (457)	(19)	(71)			(59)	(97)	7 13/16 (198)	
24″ (610)	22″ (559)							10 5/16 (262)	11 13/16 (300)
12″ (305)	10″ (254)				N/A				
16″ (406)	14″ (356)	1 CA	3	8 11/16 (221)		2 3/4	3 5/8	N/A	N/A
20″ (508)	18″ (457)	(25)	(76)		9 (229)	(70)	(92)	10 7/8 (257)	
24″ (610)	22″ (559)							10 1/8 (257)	11 5/8 (295)
12″ (305)	10″ (254)			N/A					
16″ (406)	14″ (356)	1 1/4 CA	3 1/8		N/A	2 9/16	3 7/16	N/A	N/A
20″ (508)	18″ (457)	(32)	(79)	9 1/8 (232)		(65)	(87)	10 11/16 (271)	
24″ (610)	22″ (559)							10 (254)	11 7/16 (265)
12″ (305)	10″ (254)			N/A	N/A				
16″ (406)	14″ (356)	1 1/4 ST	3 3/8			2 5/8	3 1/4	N/A	N/A
20″ (508)	18″ (457)	(32)	(86)	11 7/8 (302)	13 3/8 (340)	(67)	(83)	10 1/2 (267)	
24″ (610)	22″ (559)							9 3/4 (248)	11 1/4 (286)
12″ (305)	10″ (254)								
16″ (406)	14″ (356)	2 ST	3 7/8	N/A	N/A	2 3/4	N/A	N/A	N/A
20″ (508)	18″ (457)	(51)	(98)			(70)		9 3/8 (238)	10 (254)
24″ (610)	22″ (559)			12 3/8 (314)	13 7/8 (352)			9 1/4 (235)	10 3/4 (273)

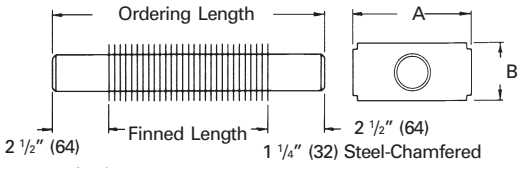
Dimensions shown in ( ) are in millimeters.

Dimensional Data

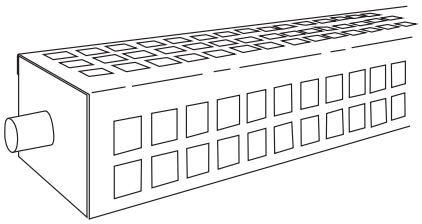
Element Dimensions – Table DD-7







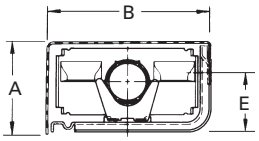
TYPE X ENCLOSURE



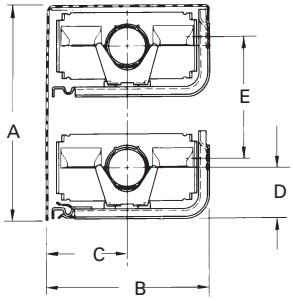
TYPE X ENCLOSURE WALL HANGER AND CEILING HANGER

Type X enclosure ratings are 3 percent less than bare element ratings. Made of 18-gauge (1.2 mm thickness) steel, cleaned, phosphatized and finished in standard prime baked enamel finish. Also available in choice of six baked enamel finish colors.

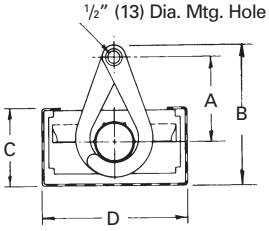
Type X Enclosure — One Row of Element, Wall Mounted – Table DD-8



Type X Enclosure — Two Rows of Elements, Wall Mounted – Table DD-9



Type CS Enclosure — One Row of Element, Ceiling Mounted – Table DD-10



Dimensions shown in ( ) are in millimeters

Dimensional Data

Table DD-7 — Wall Fin Element Dimensions

Dimension	3/4″ (19) , 1″ (25 mm) Or 1 1/4″ (32) Copper Aluminum Series 40-50-58	1 1/4″ (32) Copper Aluminum Series 40-50-58	1 1/4″ (32) Steel Series 52
A	3 1/4″ (83)	5 1/4″ (133)	5 1/4″ (133)
B	3 1/4″ (83)	3 1/4″ (83)	2 1/2″ (64)

Table DD-8

Enclosure Type	4x	5x
Dimension	3 1/4″ (83) Fin	5 1/4″ (133) Fin
A	4 5/8″ (117)	4 5/8″ (117)
B	4″ (102)	6″ (152)
E	3 1/4″ (83)	3 1/4″ (83)

Table DD-9

Enclosure Type	10x	12x	11x	13x
Dimension	3 1/4″ (83) Fin		5 1/4″ (133) Fin	
A	10 5/8″ (270)	12 5/8″ (321)	10 5/8″ (270)	12 5/8″ (321)
B	4″ (102)	4″ (102)	6″ (152)	6″ (152)
C	2″ (51)	2″ (51)	3″ (76)	3″ (76)
D	2 1/2″ (64)	2 1/2″ (64)	2 3/4″ (70)	2 3/4″ (70)
E	6″ (152)	8″ (203)	6″ (152)	8″ (203)

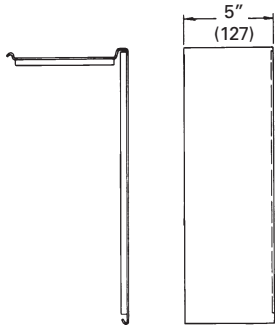
Table DD-10

Dimension	3 1/4″ (83) CA	5 1/4″ (83) CA	5 1/4″ (133) S
A	3 5/8″ (92)	3 1/2″ (89)	3 1/4″ (83)
B	5 5/8″ (143)	5 1/2″ (140)	5″ (127)
C	3 7/8″ (98)	3 7/8″ (98)	3 7/8″ (98)
D	3 3/4″ (95)	5 3/4″ (146)	5 3/4″ (146)

CA — Copper Aluminum Element
S — All Steel Element

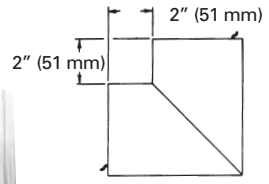
Options

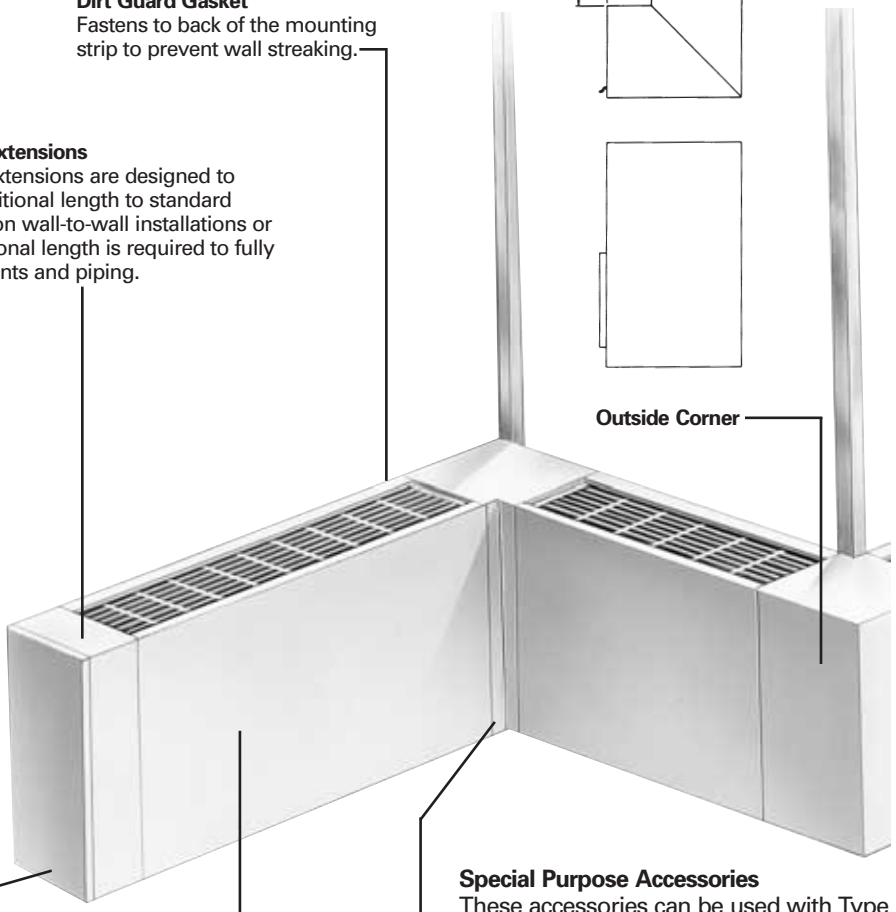
Type T — Top Outlet Wall Fin Enclosure Shown

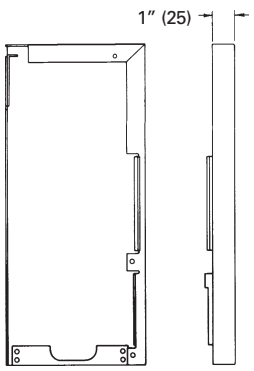


Dirt Guard Gasket
Fastens to back of the mounting strip to prevent wall streaking.

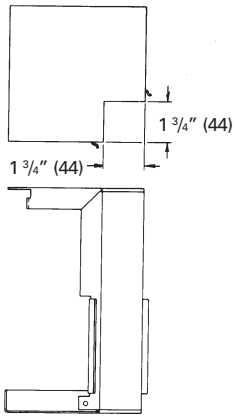
Enclosure Extensions
Enclosure extensions are designed to provide additional length to standard enclosures on wall-to-wall installations or when additional length is required to fully cover elements and piping.







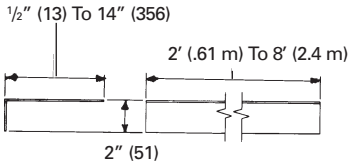
End Panel



Inside Corner

Special Purpose Accessories
These accessories can be used with Type S, F, T and TA enclosures.

Sill Extension

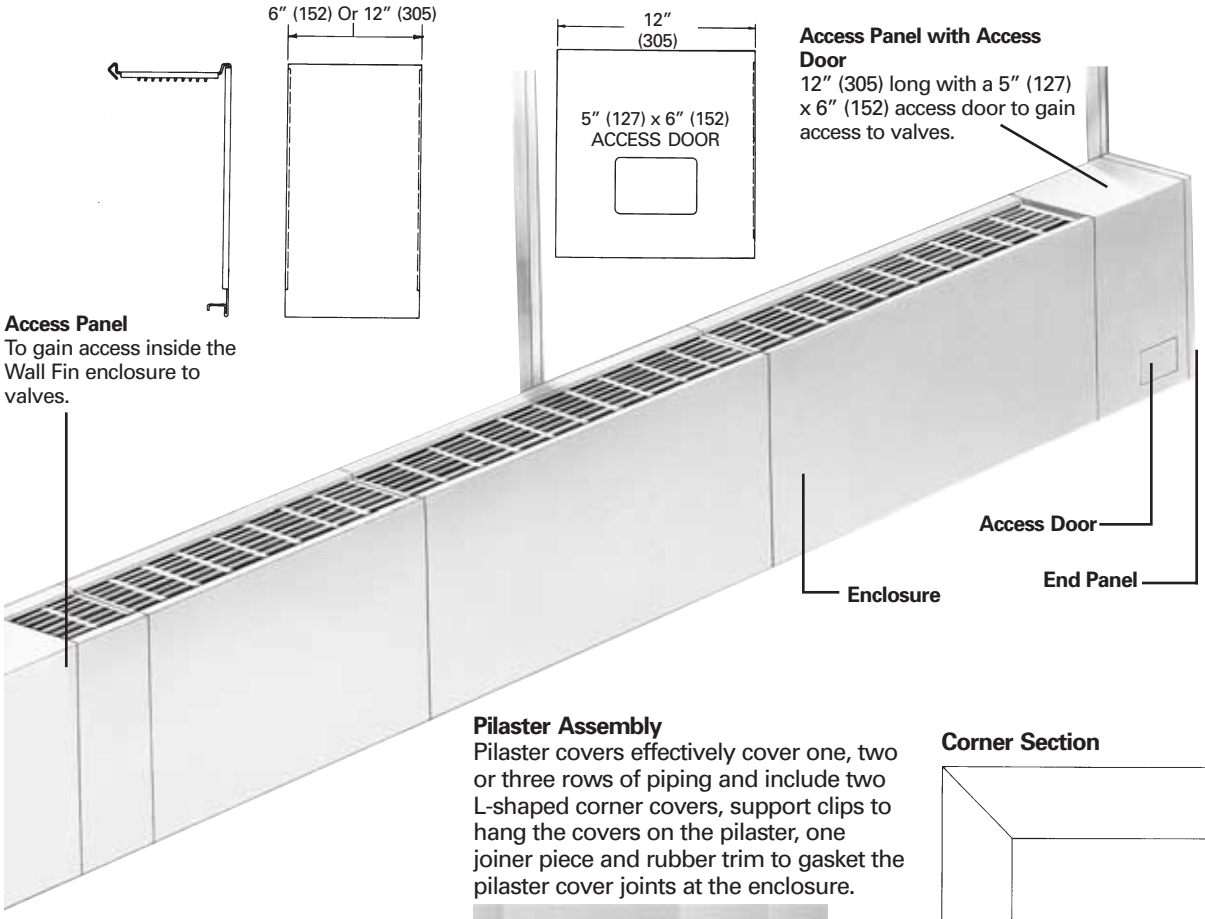


Sill extensions are used to extend the top of the cabinet back to the wall or window sill. They can add up to 14 inches (356 mm) of continuous surface to the top of the unit.

The sill extension is a separate angle piece and is to be installed at the same time as the mounting strip. The front 90-degree edge of the sill extension should be butted up to the back side of the mounting strip.

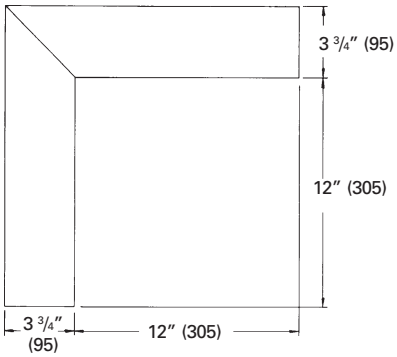
Dimensions shown in ( ) are in millimeters.

Options

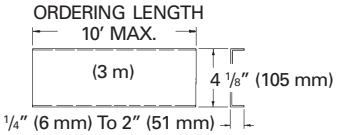


Pilaster Assembly
Pilaster covers effectively cover one, two or three rows of piping and include two L-shaped corner covers, support clips to hang the covers on the pilaster, one joiner piece and rubber trim to gasket the pilaster cover joints at the enclosure.

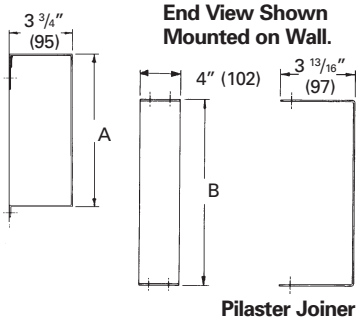
Corner Section



Mullion Channel



Mullion channels are used on panel walls or curtain walls where the wall studs (or mullions) are more than four feet apart and project into the room. Because of the weight of the wall fin unit and the lack of strength in the wall construction, mullion channels are used to provide support between the wall studs. The channels fill the space between the wall fin cabinet and the panel wall or curtain wall.



End View Shown Mounted on Wall.

Pilaster Joiner Piece

Table O-1 — Pilaster Assembly Dimensions

Dimension	No. 5	No. 11	No. 17
A	5″ (127)	11″ (279)	17″ (432)
B	5 1/8″ (130)	11 1/8″ (283)	17 1/8″ (435)

Dimensions shown in ( ) are in millimeters.

Mechanical Specifications

General
The contractor shall furnish and install Trane wall fin as shown on the plans. Ratings shall be IBR approved. Units shall be installed in a neat and workmanlike manner in accordance with specifications and manufacturer recommendations.

Heating Elements
Element types, as indicated on plans, shall have integral fin collars which space the fins and provide fin-to-tube surface firmly bonded by mechanical expansion of the tube to ensure durability, eliminate noise from loose fins and assure performance at cataloged ratings. Elements shall be positively positioned front-to-back, with provisions for silent horizontal expansion and contraction.

Enclosures
Enclosures shall be as scheduled on the plans, constructed of 16-gauge 1.5 mm thickness, or optional 14-gauge 1.9 thickness steel and shall mount into a continuous roll-formed captive channel mounting strip which permits hinge-type mounting and access at the top and invisible fastening onto rigidized, 14-gauge (1.9 mm thickness) steel enclosure brackets at the bottom. Enclosure brackets shall be spaced at not more than four-foot (1.2 m) intervals.

Front panels shall be individually removable to facilitate cleaning, servicing or replacement. All accessories shall fasten to the enclosure assembly in a manner which prevents contact with the back wall during installation.

Cabinet air outlets of stamped sheet metal or the manufacturer shall supply a bar type extruded aluminum grille to provide strong linear styling.

Type 3E and 4E enclosures shall be 16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel. Type E3 and E3-2W enclosures shall be 16-gauge steel.

Type X and CS enclosures shall be 18-gauge (1.2 mm) steel with stamped square outlet openings. Enclosures to have smooth edges on all sides.

Pipe Enclosures
Pipe enclosures shall be as scheduled on the plans, constructed of solid (16-gauge 1.5 mm thickness) steel or optional (14-gauge 1.9 mm thickness) steel and shall mount into a continuous roll-formed captive channel mounting strip which permits hinge-type mounting and access at the top and fastening at the bottom with visible fasteners by others. Front panels shall be solid metal top and bottom, one piece wrap around and be individually removable to facilitate servicing or replacement.

Standard Finish
All enclosures, mounting strips and accessories are cleaned, phosphatized and painted with one coat of prime, baked enamel finish as standard.

Other Color Finishes
Other baked-on enamel color finishes available as standard shall be chosen from Color Selection Chart UNT-S-10.

Accessories And Options
End panels, inside and outside corners and enclosure extensions shall be die-formed and shall lock to enclosure assembly without visible fasteners.

Dampers (hydronic units only) shall reduce heating capacity up to 70 percent when closed and shall be factory mounted on the element. The control dial shall be jam-proof and have a mechanism which prevents damage to the dial or damper. As an alternate, the contractor shall furnish and install control valves and appropriate access.

Access panels shall be installed where valves, balancing cocks or traps are indicated on the plans.

The 3E and 4E wall mounted element covers (16-gauge (1.5 mm thickness) or 14-gauge (1.9 mm thickness) steel) and accessories shall be provided as indicated on the plans. (Accessories require visible fasteners.)

Type E3 and E3-2W three-sided pedestal mounted element covers and accessories shall be provided where shown on plan. (Enclosures of 16-gauge (1.5 mm) steel only.) (Accessories require visible fasteners.)

Back panels, sill extensions, mullion channel, stamped sheet metal, front air inlet grilles, tamperproof screw assemblies and pilaster covers shall be provided where indicated on plans. To prevent dirt streaking, contractor shall either apply dirt guard gasket to mounting strip or caulk along top of mounting strip.

Bottom Air Inlet Grille
The bottom air inlet grille shall be of stamped sheet metal and part of the front panel (one piece) installs into the mounting strip at the top and attaches to the wall at the bottom with visible fasteners by others. Bottom air inlet grille configurations use Type E wall brackets for installation of the heating element.

Mechanical Specifications

Type E3A-1W and E3A-2W with Aluminum Air Outlet Grilles

Specifications
Natural convection with extruded aluminum air out grille(s). Pedestal floor mounted wall fin shall be furnished to meet the specified capacity. Enclosures etc., heating elements and accessories shall be installed in accordance with the manufacture's recommendations.

TYPE - E3A-1W - Enclosure
Floor mounted Type E3A-1W single wide element enclosure has continuous aluminum air outlet grilles made of heavy extruded aluminum, finished in an etched and clear 204-R1 hard anodized finish. E3A-1W cover of 16 gauge (1.5 mm), or optional 14 gauge (1.9 mm) steel with wall sleeve at each joint for panel to panel joining, and alignment. Enclosure mounted on U-shaped 0.1875" thick (4.8 mm) phosphatized steel enclosure/ pedestal/element bracket assembly painted black. Two ball bearing cradle guides with slide cradle are provided for each bracket to allow the element to expand and contract without strain or noise. Enclosure height of 6 3/4" (171 mm) with overall installed height from floor to top of enclosure of 10 3/4" (273 mm). Enclosure depth of 6 1/16" (154 mm) furnished in lengths of 2 feet (.61 m) through 8 feet (2.4 m) in 6" (0.1524 m) increments.

TYPE - E3A-2W - Enclosure
Floor mounted Type E3A-2W double wide element enclosure have continuous aluminum air outlet grilles made of heavy extruded aluminum, finished in an etched and clear 204-R1 hard anodized finish. E3A-2W cover of 16 gauge (1.5 mm), or optional 14 gauge (1.9 mm) steel with wall sleeve at each joint for panel to panel joining, and alignment. Enclosure mounted on U-shaped 0.1875" thick (4.8 mm) phosphatized steel enclosure/pedestal/ element bracket assembly painted black. Two ball bearing cradle guides with slide cradle are provided for each bracket to allow the element to expand and contract without strain or noise. Enclosure height of 6 3/4" (171 mm) with overall installed height from floor to top of enclosure of 10 3/4" (273 mm). Enclosure depth of 10 5/16" (262 mm) furnished in lengths of 2 feet (.61 m) through 8 feet (2.4 m) in 6" (0.1524 m) increments.

Accessories
4" (102 mm) 6" (152 mm) or 8 3/8" (213 mm) wide wall sleeves required at each joint for panel to panel alignment are underlapping reveal type.

3" end panels, 8 3/8" (213 mm) wide wall sleeve with access door, 90 or 135 degree inside corners, 90 or 135 degree outside corners fabricated of 18 gauge (1.2 mm) steel are underlapping reveal type.

Slide Damper
Slide damper available for type E3A-1W enclosure only and is factory installed on the extruded aluminum air outlet grille. The slide damper assembly consisting of two integrated extruded aluminum clear anodized grille plates provide air discharge control by front to back positioning. Requires no mechanical actuating parts.

Mechanical Specifications

Color Finish
All enclosures, back plate/mounting strip and accessories shall be painted with a baked-on commercial primer paint as standard. Optional baked-on enamel color finishes shall be available.

Color Options Baked-on enamel color finish shall be chosen from Color Selection Chart UNT-S-10 May 1994.
- Prime (Standard) Optional Colors
- Deluxe Beige
- Cameo White
- Soft Dove
- Driftwood Grey
- Stone Grey
- Rose Mauve

Heating Elements
- 3/4″ CA (19 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 1/4″ x 3 5/8″ (108 mm x 92 mm) size fins x .020″ (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1″ CA (25 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .020″ (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 1/4″ CA (32 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .020″ (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 1/4″ Steel (32 mm) (Steel Tube-Steel Fins) The heating elements shall be constructed of condenser tubing mechanically expanded into steel fins. Tube ends shall be threaded and furnished with NPT threads. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .032″ (.81 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 32 fins per foot (105 fins per m).

Element Lengths
3/4″ CA (19 mm) elements shall be provided in 1′ (.3048 m) thru 8′ (2.44 m) lengths in 6″ (.1524 m) increments.

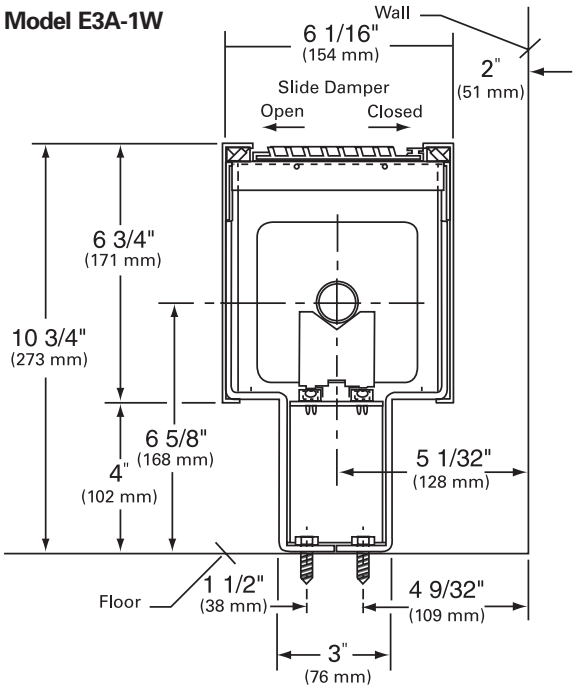
1″ CA (25 mm) & 1 1/4″ CA (32 mm) elements shall be provided in 1′ (.3048 m) thru 12′ (3.66 m) lengths in 6″ (.1524 m) increments.

1 1/4″ Steel (32 mm) elements shall be provided in 1′ (.3048 m) thru 12′ (3.66 m) lengths in 6″ (.1524 m) increments.

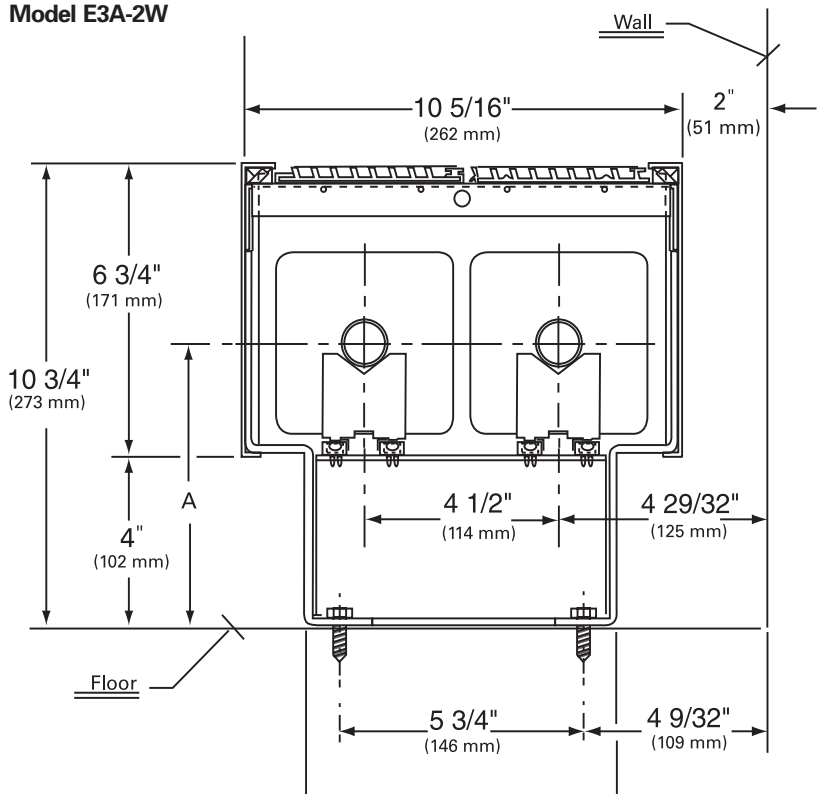
Heating Elements With 3 1/4″ x 3 1/4″ (83 x 83 mm) Size Fins
- 3/4″ (19 mm) CA (Copper Tube- Aluminum Fin) The heating elements shall be copper-aluminum constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 1/4″ x 3 1/4″ (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 8 foot (2.44 m) lengths in 6 inch (.1524 m) increments.
- 1″ (25 mm) CA (Copper Tube- Aluminum Fin) Copper-Aluminum elements constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 1/4″ x 3 1/4″ (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 12 foot (3.66 m) lengths in 6 inch (.1524 m) increments.
- 1 1/4″ (32 mm) CA (Copper Tube- Aluminum Fin) Copper-Aluminum elements constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 1/4″ x 3 1/4″ (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 12 foot (3.66 m) lengths in 6 inch (.1524 m) increments.

Mechanical Specifications

Model E3A-1W

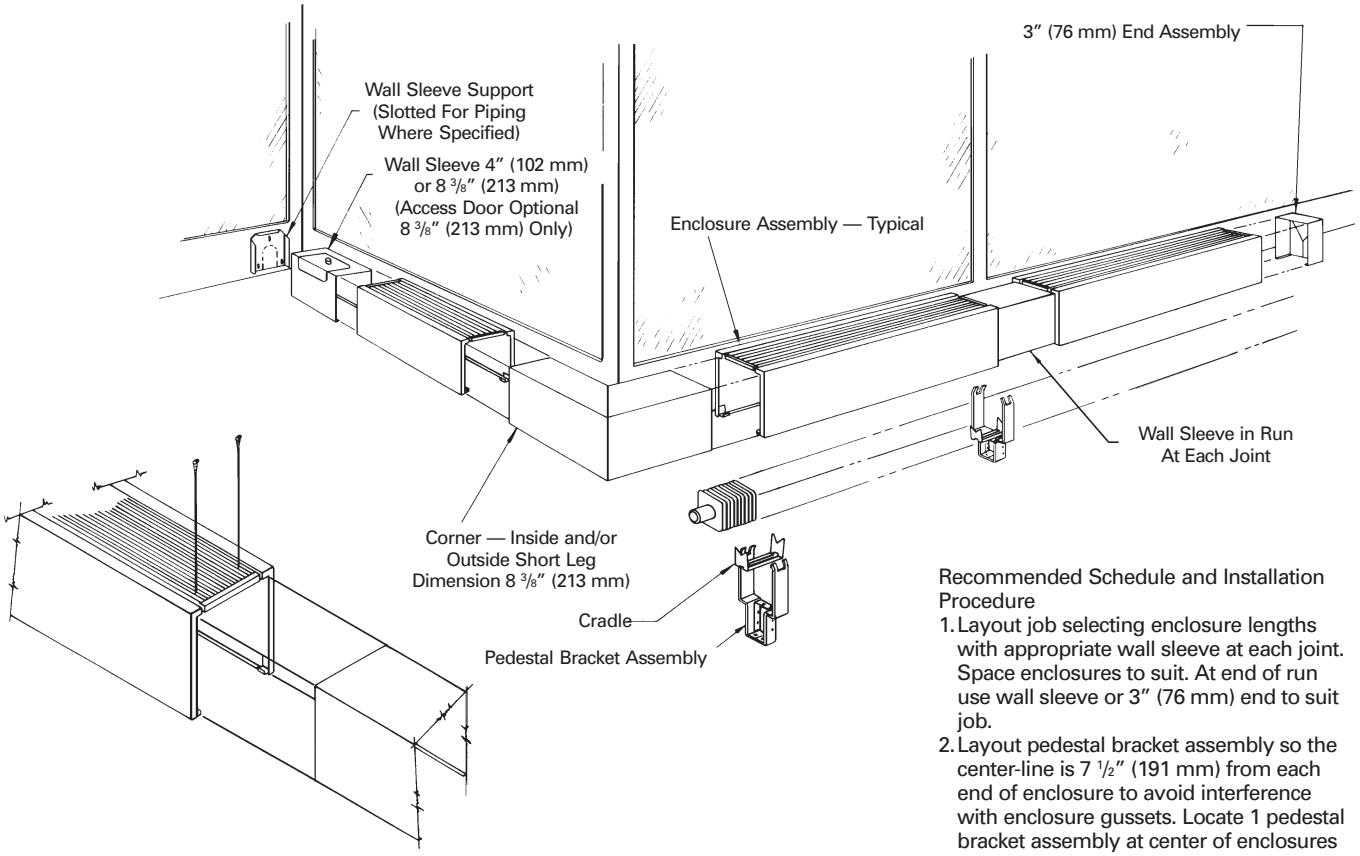


Model E3A-2W



Mechanical Specifications

Installation Layout for Pedestal Mount E3A-1W One Wide Enclosure



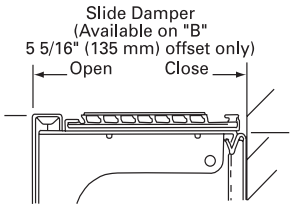
Note: Fasten accessory with 6 S.M. Screw through solid part of grille. Drill 37 (104) holes into accessory when in position.

One wide enclosure shown.

Recommended Schedule and Installation Procedure

1. Layout job selecting enclosure lengths with appropriate wall sleeve at each joint. Space enclosures to suit. At end of run use wall sleeve or 3″ (76 mm) end to suit job.
2. Layout pedestal bracket assembly so the center-line is 7 1/2″ (191 mm) from each end of enclosure to avoid interference with enclosure gussets. Locate 1 pedestal bracket assembly at center of enclosures longer than 4 ft. (1.22 m).

NOTE: Schedule enclosures to overlap accessories 1″-3″ (25-76 mm) except ends 1″-2″ (25-51 mm) with access door overlap max. 1″ (25 mm).



Slide Damper (SD) — Optional
The slide damper assembly consisting of two integrated extruded aluminum clear anodized grille plates provide air discharge control by front to back positioning which requires no mechanical actuating parts.

Mechanical Specifications

Metric Conversions

1 Psi = 6.895 kPa (Kilo Pascals) at 65°F Air = 18.3°C Air

Sq. Ft. EDR at 1 Psi (6.895 kPa) at 65°F Air (18.3°C) Air x 240 BTU = Total BTU's (Watts)

1 BTU/HR. = 0.2931 Watts

1 Foot = 0.3048 Meters - 1 Meter = 3.2808 Feet

1 BTU/HR/FT = 0.9616 Watts/Meter

10.7639 Sq. Feet = 1 Square Meter

1 Lbs = 0.4536 Kg (Kilograms)

1 Inch = 25.4 mm (Millimeters)

Capacities based Finned Length at a Water Velocity of 3 feet per second or 0.9144 Meter per second or greater

Table M-1 — Ratings, Type E3A-1W Enclosures With Copper/Aluminum Elements With 3 1/4" x 3 1/4" (83 mm x 83 mm) Size Fins

					Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**		Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**													
							220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
	Fin Series Per Foot			Install. Height Inches	EDR Sq. Ft.	Btu/Hr./Ft.	IBR Factor — Steam to Hot Water												
Element	**Per Meter**	Tiers	Encl.	**mm**	**Sq. M**	**Watts/Meter**	1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33	0.26	0.20	0.15
3/4" CA																			
19 mm																			
Copper Tube	40	1	E3A-1W	9 3/16	4.04	970	1020	920	835	755	670	590	515	435	390	320	250	195	145
Alum. Fins	**131 m**			**233**	**43**	**933**	**981**	**885**	**803**	**726**	**644**	**567**	**495**	**418**	**375**	**308**	**240**	**188**	**139**
Fins 3 1/4" x 3 1/4"	50	1	E3A-1W	9 3/16	4.48	1075	1130	1020	925	840	740	655	570	485	430	355	280	215	160
83 x 83 mm	**164 m**			**233**	**48**	**1030**	**1090**	**981**	**889**	**808**	**712**	**630**	**548**	**466**	**413**	**341**	**269**	**207**	**154**
Thickness .0135"	58	1	E3A-1W	9 3/16	4.75	1140	1200	1085	980	890	785	695	605	515	455	375	295	230	170
.34 mm	**190 m**			**233**	**51**	**1100**	**1150**	**1040**	**942**	**856**	**755**	**668**	**582**	**495**	**438**	**361**	**284**	**221**	**163**
1" CA																			
25 mm																			
Copper Tube	40	1	E3A-1W	9 3/16	4.04	970	1020	920	835	755	670	590	515	435	390	320	250	195	145
Alum. Fins	**131 m**			**233**	**43**	**933**	**981**	**885**	**803**	**726**	**644**	**567**	**495**	**418**	**375**	**308**	**240**	**188**	**139**
Fins 3 1/4" x 3 1/4"	50	1	E3A-1W	9 3/16	4.43	1065	1120	1010	915	830	735	650	565	480	425	350	275	215	160
83 x 83 mm	**164 m**			**233**	**48**	**1020**	**1080**	**971**	**880**	**798**	**707**	**625**	**543**	**462**	**409**	**337**	**264**	**207**	**154**
Thickness .0135"	58	1	E3A-1W	9 3/16	4.66	1120	1175	1065	965	875	775	685	595	505	450	370	290	225	170
.34 mm	**190 m**			**233**	**50**	**1080**	**1130**	**1020**	**928**	**841**	**745**	**659**	**572**	**486**	**433**	**356**	**279**	**216**	**163**
1 1/4" CA																			
32 mm																			
Copper Tube	40	1	E3A-1W	9 3/16	4.08	980	1030	930	840	765	675	600	520	440	390	325	255	195	145
Alum. Fins	**131 m**			**233**	**44**	**942**	**990**	**894**	**808**	**736**	**649**	**577**	**500**	**423**	**375**	**313**	**245**	**188**	**139**
Fins 3 1/4" x 3 1/4"	50	1	53A-1W	9 3/16	4.43	1065	1120	1010	915	830	735	650	565	480	425	350	275	215	160
83 x 83 mm	**164 m**			**233**	**48**	**1020**	**1080**	**971**	**880**	**798**	**707**	**625**	**543**	**462**	**409**	**337**	**264**	**207**	**154**
Thickness .0135"	58	1	E3A-1W	9 3/16	4.62	1110	1165	1055	955	865	765	680	590	500	445	365	290	220	165
.34 mm	**190 m**			**233**	**50**	**1070**	**1120**	**1010**	**918**	**832**	**736**	**654**	**567**	**481**	**428**	**351**	**279**	**212**	**159**

IBR does not have procedure for rating pedestal mounted enclosures.
Dimensions in **bold** indicate metric units.

Mechanical Specifications

Table M-2 — Ratings, Type E3A-1W Enclosure With Copper Aluminum Elements

Tube Size Inches (mm)	Catalog Desig.	Fin Size In. (mm)	Fin Per Ft. (Per M)	Fin Thickness In. (mm)	Encl. Height Inches (mm)	1-Row Wide	Mtg. Height Inches (mm)	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** Btu/Hr./Ft. **Watts/Meter**	Hot Water (Avg.) 200°F 93°C	190°F 88°C	180°F 82°C	170°F 77°C	160°F 71°C	150°F 66°C	140°F 60°C	130°F 54°C
									Factor							
3/4	3CA4340	4 1/4 x 3 5/8	40	.020	6 3/4	1-W	10 3/4	1190	1020	930	820	730	630	540	480	390
(19)		**(108 x 92)**	**(131)**	**(.51)**	**(171)**		**(273)**	**1140**	**981**	**894**	**789**	**702**	**606**	**519**	**462**	**375**
3/4	3CA4350	4 1/4 x 3 5/8	50	.020	6 3/4	1-W	10 3/4	1290	1110	1010	890	790	680	580	520	430
(19)		**(108 x 92)**	**(164)**	**(.51)**	**(171)**		**(273)**	**1240**	**1070**	**971**	**856**	**760**	**654**	**558**	**500**	**413**
1	1CA4440	4 1/4 Sq.	40	.020	6 3/4	1-W	10 3/4	1440	1240	1120	990	880	760	650	580	480
(25)		**(108) Sq.**	**(131)**	**(.51)**	**(171)**		**(273)**	**1380**	**1190**	**1080**	**952**	**846**	**731**	**625**	**558**	**462**
1	1CA4450	4 1/4 Sq.	50	.020	6 3/4	1-W	10 3/4	1480	1270	1150	1020	990	780	670	590	490
(25)		**(108) Sq.**	**(164)**	**(.51)**	**(171)**		**(273)**	**1420**	**1220**	**1110**	**981**	**952**	**750**	**644**	**567**	**471**
1 1/4	4CA4440	4 1/4 Sq.	40	.020	6 3/4	1-W	10 3/4	1340	1150	1050	920	820	710	600	540	440
(32)		**(108) Sq.**	**(131)**	**(.51)**	**(171)**		**(273)**	**1290**	**1110**	**1010**	**885**	**789**	**683**	**577**	**519**	**423**
1 1/4	4CA4450	4 1/4 Sq.	50	.020	6 3/4	1-W	10 3/4	1470	1260	1150	1010	900	780	660	590	490
(32)		**(108) Sq.**	**(164)**	**(.51)**	**(171)**		**(273)**	**1410**	**1210**	**1110**	**971**	**865**	**750**	**635**	**567**	**471**

Table M-3 — Ratings, Type E3A-1W Enclosure With Steel Elements

I.P.S. Size Inches (mm)	Catalog Desig.	Fin Size In. (mm)	Fin Per Ft. (Per M)	Fin Thickness In. (mm)	Encl. Height Inches (mm)	1-Row Wide	Mtg. Height Inches (mm)	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** Btu/Hr./Ft. **Watts/Meter**	Hot Water (Avg.) 200°F 93°C	190°F 88°C	180°F 82°C	170°F 77°C	160°F 71°C	150°F 66°C	140°F 60°C	130°F 54°C
									Factor							
1 1/4	*4ST4432	4 1/4 Sq.	32	0.32	6 3/4	1-W	10 3/4	1130	970	880	780	690	600	510	450	370
(32)		**(108) Sq.**	**(105)**	**(.81)**	**(171)**		**(273)**	**1090**	**933**	**846**	**750**	**664**	**577**	**490**	**433**	**356**
1 1/4	*4ST4440	4 1/4 Sq.	40	.032	6 3/4	1-W	10 3/4	1240	1070	970	860	760	660	560	500	410
(32)		**(108) Sq.**	**(131)**	**(.81)**	**(171)**		**(273)**	**1190**	**1030**	**933**	**827**	**731**	**635**	**538**	**481**	**394**

*Note: NPT threads furnished on steel elements. Please use domestic fittings for proper installation.

Mechanical Specifications

Table M-4 — Ratings, Type E3A-2W Double Wide Pedestal Enclosure With Copper Aluminum Elements

Tube Size Inches (mm)	Catalog Desig.	Fin Size In. (mm)	Fin Per Ft. (Per M)	Fin Thickness In. (mm)	Encl. Height Inches (mm)	2-Rows Wide	Mtg. Height Inches (mm)	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** Btu/Hr./Ft. **Watts/Meter**	Hot Water (Avg.) 200°F 93°C	190°F 88°C	180°F 82°C	170°F 77°C	160°F 71°C	150°F 66°C	140°F 60°C	130°F 54°C
									Factor							
3/4	3CA4340	4 1/4 x 3 5/8	40	.020	6 3/4	2-W	10 3/4	1820	1570	1420	1260	1110	960	820	730	600
(19)		**(108 x 92)**	**(131)**	**(.51)**	**(171)**		**(273)**	**1750**	**1510**	**1360**	**1210**	**1070**	**923**	**789**	**702**	**577**
3/4	3CA4350	4 1/4 x 3 5/8	50	.020	6 3/4	2-W	10 3/4	1980	1700	1540	1370	1210	1050	890	790	650
(19)		**(108 x 92)**	**(164)**	**(.51)**	**(171)**		**(273)**	**1900**	**1640**	**1480**	**1320**	**1160**	**1010**	**856**	**760**	**625**
1	1CA4440	4 1/4 Sq.	40	.020	6 3/4	2-W	10 3/4	2450	2110	1910	1690	1490	1300	1100	980	810
(25)		**(108) Sq.**	**(131)**	**(.51)**	**(171)**		**(273)**	**2360**	**2030**	**1840**	**1620**	**1430**	**1250**	**1060**	**942**	**779**
1	1CA4450	4 1/4 Sq.	50	.020	6 3/4	2-W	10 3/4	2540	2180	1980	1750	1550	1350	1140	1020	804
(25)		**(108) Sq.**	**(164)**	**(.51)**	**(171)**		**(273)**	**2440**	**2100**	**1900**	**1680**	**1490**	**1300**	**1100**	**981**	**808**
1 1/4	4CA4440	4 1/4 Sq.	40	.020	6 3/4	2-W	10 3/4	2290	1970	1790	1580	1400	1210	1030	920	760
(32)		**(108) Sq.**	**(131)**	**(.51)**	**(171)**		**(273)**	**2200**	**1890**	**1720**	**1520**	**1350**	**1160**	**990**	**885**	**731**
1 1/4	4CA4450	4 1/4 Sq.	50	.020	6 3/4	2-W	10 3/4	2530	2180	1970	1750	1540	1340	1140	1010	830
(32)		**(108) Sq.**	**(164)**	**(.51)**	**(171)**		**(273)**	**2430**	**2100**	**1890**	**1680**	**1480**	**1290**	**1100**	**971**	**798**

Table M-5 — Ratings, Type E3A-2W Double Wide Pedestal Enclosure With Steel Elements

I.P.S. Size Inches (mm)	Catalog Desig.	Fin Size In. (mm)	Fin Per Ft. (Per M)	Fin Thickness In. (mm)	Encl. Height Inches (mm)	2-Rows Wide	Mtg. Height Inches (mm)	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air** Btu/Hr./Ft. **Watts/Meter**	Hot Water (Avg.) 200°F 93°C	190°F 88°C	180°F 82°C	170°F 77°C	160°F 71°C	150°F 66°C	140°F 60°C	130°F 54°C
									Factor							
1 1/4	*4ST4432	4 1/4 Sq.	32	.032	6 3/4	2-W	10 3/4	1550	1330	1210	1070	950	820	700	620	510
(32)		**(108) Sq.**	**(105)**	**(.81)**	**(171)**		**(273)**	**1490**	**1280**	**1160**	**1030**	**914**	**789**	**673**	**596**	**490**
1 1/4	*4ST4440	4 1/4 Sq.	40	.032	6 3/4	2-W	10 3/4	1900	1630	1480	1310	1160	1010	860	760	630
(32)		**(108) Sq.**	**(131)**	**(.81)**	**(171)**		**(273)**	**1830**	**1570**	**1420**	**1260**	**1120**	**971**	**837**	**731**	**606**

*Note: NPT threads furnished on steel elements. Please use domestic fittings for proper installation.

Dimensions in **bold** indicate metric units.

Mechanical Specifications

Type DS Double Slope Wall Mounted

Specifications
Natural convection double slope wall mounted. Wall fin shall be furnished to meet the specified capacity. Enclosures etc., heating elements and accessories shall be installed in accordance with the manufacture's recommendations.

TYPE - DS - Double Slope Enclosure Mounting
Hydronic Type DS Double Slope Wall Fin enclosures shall be wall mounted 40″ (1016 mm) minimum above the floor level to obtain catalog capacities.

Type DS double slope enclosure furnished with louvered air inlet and outlet grilles of one piece full wrap-around design for complete engagement with the wall to prevent access to the inside of the enclosure. Enclosures fabricated from 16 gauge (1.5 mm thickness) steel for strength and durability. Optional 18 gauge (1.2 mm thickness) steel is available. All enclosure panels manufactured with interlocking slip joints provides a positive snap fit between enclosures. Internal 14 gauge (1.9 mm) gussets provide additional strength and rigidity. A full back plate (one piece) is furnished with a formed mounting channel at the top of the back plate for installation of the element brackets which are mounted to the top inside form of the back plate providing proper positioning of each bracket and engages the top of the enclosure. The enclosures air inlet are provided with a 7/16″ (11 mm) 90 degree turn down for fastening the bottom of the enclosure panel to the bottom form of the backplate to securely lock it in place. Enclosure depth of 5 5/16″ (135 mm) furnished in heights of 19 1/2″ (495 mm), 25 1/2″ (648 mm) and 29 1/2″ (749 mm). Enclosures available in 2 feet (0.61 m) through 8 feet (2.4 m) in 6″ (0.15 m) increments.

Enclosure brackets with adjustable element supports are die-formed channel type construction to provide rigid support of the heating element. Nickel chromium plated ball bearings encased in a nylon insert with galvanized element cradles provides for silent glide operation during expansion and contraction of the heating element.

Dampers
Fully modulating knob operated and tamper resistant dampers field installed on the air inlet grille and gussets for positive temperature control.

Accessories
End caps 3″ (76 mm) wide in left and right hand configurations.

End caps 8 3/8″ (213 mm) wide with access door in left and right hand configurations.

4″ (102 mm) and 8 3/8″ (213 mm) wide wall sleeves.

8 3/8″ (213 mm) wide wall sleeve with access door.

90 degree inside and outside corners.

All accessories die-formed with flange at top to engage behind the back plate.

Mechanical Specifications

Color Finish
All enclosures, back plate/mounting strip and accessories shall be painted with a baked-on commercial primer paint as standard. Optional baked-on enamel color finishes shall be available.

Color Options Baked-on enamel color finish shall be chosen from Color Selection Chart UNT-S-10 May 1994.
- Prime (Standard) Optional Colors
- Deluxe Beige
- Cameo White
- Soft Dove
- Driftwood Grey
- Stone Grey
- Rose Mauve

Heating Elements
- ¾" CA (19 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 ¼" x 3 ⅝" (108 mm x 92 mm) size fins x .020" (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1" CA (25 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 ¼" x 4 ¼" (108 mm x 108 mm) size fins x .020" (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 ¼" CA (32 mm) (Copper Tube-Aluminum Fin) The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 4 ¼" x 4 ¼" (108 mm x 108 mm) size fins x .020" (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 ¼" Steel (32 mm) (Steel Tube-Steel Fins) The heating elements shall be constructed of condenser tubing mechanically expanded into steel fins. Tube ends shall be threaded and furnished with NPT threads. 4 ¼" x 4 ¼" (108 mm x 108 mm) size fins x .032" (.81 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 32 fins per foot (105 fins per m).

Element Lengths
¾" CA (19 mm) elements shall be provided in 1' (.3048 m) thru 8' (2.44 m) lengths in 6" (1.6 m) increments.

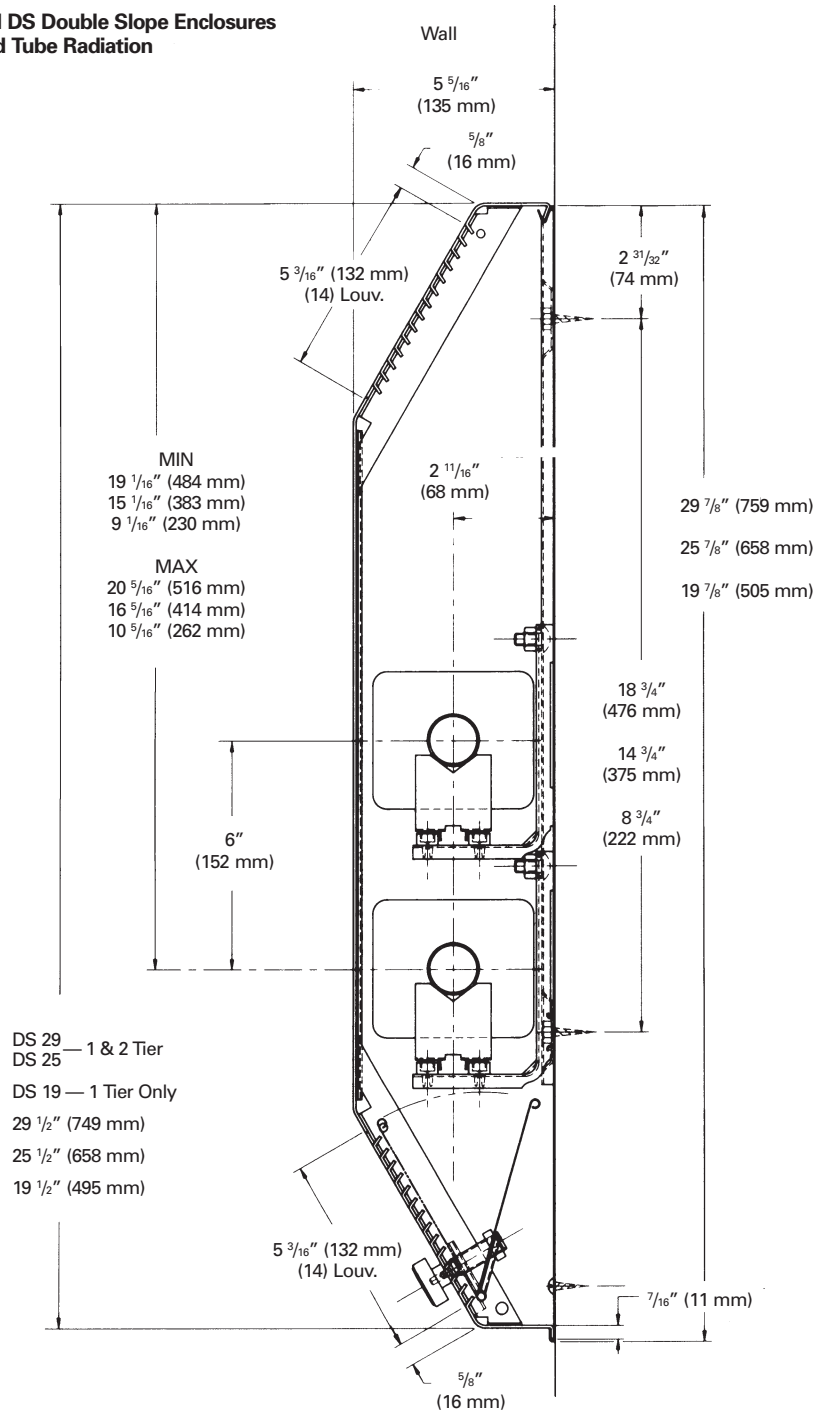
1" CA (25 mm) & 1 ¼" CA (32 mm) elements shall be provided in 1' (.3048 m) thru 12' (3.66 m) lengths in 6" (.152 m) increments.

1 ¼" Steel (32 mm) elements shall be provided in 1' (.3048 m) thru 12' (3.66 m) lengths in 6" (.152 m) increments.

Heating Elements With 3 ¼" x 3 ¼" (83 x 83 mm) Size Fins
- ¾" (19 mm) CA (Copper Tube- Aluminum Fin) The heating elements shall be copper-aluminum constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 ¼" x 3 ¼" (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 8 foot (2.44 m) lengths in 6 inch (.1524 m) increments.
- 1" (25 mm) CA (Copper Tube- Aluminum Fin) Copper-Aluminum elements constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 ¼" x 3 ¼" (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 12 foot (3.66 m) lengths in 6 inch (.1524 m) increments.
- 1 ¼" (32 mm) CA (Copper Tube- Aluminum Fin) Copper-Aluminum elements constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to-end joining. 3 ¼" x 3 ¼" (83 mm x 83 mm) size fins with fin spacing of 40, 50 or 58 fins per foot (132, 165 or 191 fins per meter), are provided with full collars for uniform spacing and maximum thermal contact. Formed top and bottom edges provide strength. Two louvers provided on each fin for maximum air flow efficiency. Elements shall be available in 1 foot (.3048 m) through 12 foot (3.66 m) lengths in 6 inch (.1524 m) increments.

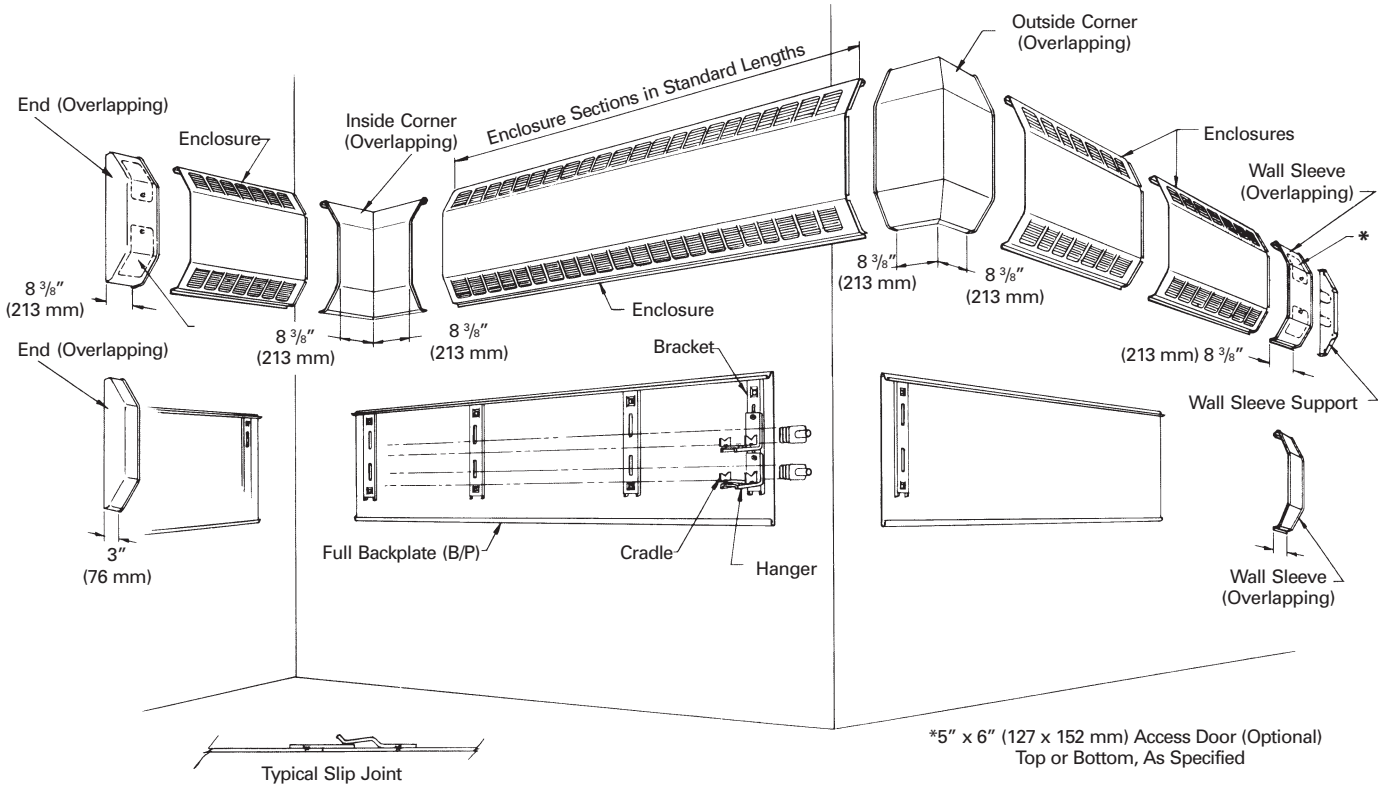
Mechanical Specifications

Model DS Double Slope Enclosures
Finned Tube Radiation



Mechanical Specifications

Model DS Double Slope Top Installation and Accessory Details



Mechanical Specifications

Capacities Based Finned Length at a Water Velocity of 3 feet per second or 0.9144 Meter per second or greater.

Table MS-6 — Ratings, 5 5/16" (135 mm) Deep, Type DS Enclosure With Copper Aluminum Elements

Tube. Size Inches **mm**	Catalog Desig.	Fin Size In. **mm**	Fin Per Ft. **Per M**	Fin Thickness In. **mm**	Encl. Height Inches **mm**	Tiers and Centers Inches **mm**	Mtg. Height Inches **mm**	Steam Capacity Per Ft. - 1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**	Hot Water (Avg.) 200°F **93°C** Factor .86	190°F **88°C** .78	180°F **82°C** .69	170°F **77°C** .61	160°F **71°C** .53	150°F **66°C** .45
					19 1/2	1	—	1270	1090	990	880	770	670	570
					495			**1200**	**1050**	**952**	**846**	**740**	**644**	**548**
					25 1/2	1	—	1390	1200	1080	960	850	740	630
					648			**1340**	**1150**	**1040**	**923**	**817**	**712**	**606**
3/4	3CA4340	4 1/4 x 3 5/8	40	.020	25 1/2	2-6"	—	1830	1570	1430	1260	1120	970	820
19		**108 x 92**	**131**	**.51**	**648**	**152 CL**		**1760**	**1510**	**1380**	**1210**	**1080**	**933**	**789**
					29 1/2	1	—	1490	1280	1160	1030	910	790	670
					749			**1430**	**1230**	**1120**	**990**	**875**	**760**	**644**
					29 1/2	2-6"	—	2060	1770	1610	1420	1260	1090	930
					749	**152 CL**		**1980**	**1700**	**1550**	**1360**	**1210**	**1050**	**894**
					19 1/2	1	—	1460	1260	1140	1010	890	770	660
					495			**1400**	**1210**	**1100**	**971**	**856**	**740**	**635**
					25 1/2	1	—	1700	1460	1330	1170	1040	900	770
					648			**1640**	**1400**	**1280**	**1120**	**1000**	**865**	**740**
3/4	3CA4350	4 1/4 x 3 5/8	50	.020	25 1/2	2-6"	—	1950	1680	1520	1350	1190	1030	880
19		**108 x 92**	**164**	**.51**	**648**	**152 CL**		**1880**	**1620**	**1460**	**1300**	**1140**	**990**	**846**
					29 1/2	1	—	1880	1620	1470	1300	1150	1000	850
					749			**1810**	**1560**	**1410**	**1250**	**1110**	**962**	**817**
					29 1/2	1	—	2230	1920	1740	1540	1360	1180	1000
					749	**152 CL**		**2140**	**1850**	**1670**	**1480**	**1310**	**1140**	**962**
					19 1/2	1	—	1460	1260	1140	1010	890	770	660
					495			**1400**	**1210**	**1100**	**971**	**856**	**740**	**635**
					25 1/2	1	—	1600	1380	1250	1100	980	850	720
					648			**1540**	**1330**	**1200**	**1060**	**942**	**817**	**692**
1	1CA4440	4 1/4	40	.020	25 1/2	2-6"	—	2120	1820	1650	1460	1290	1120	950
25		**108 Sq.**	**131**	**.51**	**648**	**152 CL**		**2040**	**1750**	**1590**	**1400**	**1240**	**1080**	**914**
					29 1/2	1	—	1730	1490	1350	1190	1060	920	780
					749			**1660**	**1430**	**1300**	**1140**	**1020**	**885**	**750**
					29 1/2	2-6"	—	2360	2030	1840	1630	1440	1250	1060
					749	**152 CL**		**2270**	**1950**	**1770**	**1570**	**1380**	**1200**	**1020**

Mechanical Specifications

Table MS-6 — Ratings, 5 5/16" (135 mm) Deep, Type DS Enclosure With Copper Aluminum Elements

Tube. Size Inches **mm**	Catalog Desig.	Fin Size In. **mm**	Fin Per Ft. **Per M**	Fin Thickness In. **mm**	Encl. Height Inches **mm**	Tiers and Centers Inches **mm**	Mtg. Height Inches **mm**	Steam Capacity Per Ft. - 1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**	Hot Water (Avg.) 200°F **93°C** Factor .86	190°F **88°C** .78	180°F **82°C** .69	170°F **77°C** .61	160°F **71°C** .53	150°F **66°C** .45
					19 1/2	1	—	1590	1370	1240	1100	970	840	720
					495			**1530**	**1320**	**1190**	**1060**	**933**	**808**	**692**
					25 1/2	1	—	1840	1580	1440	1270	1120	980	830
					648			**1770**	**1520**	**1380**	**1220**	**1080**	**942**	**798**
1	1CA4450	4 1/4	50	.020	25 1/2	2-6"	—	2110	1820	1650	1460	1290	1120	950
25		**108 Sq.**	**164**	**.51**	**648**	**152 CL**		**2030**	**1750**	**1590**	**1400**	**1240**	**1080**	**914**
					29 1/2	1	—	2040	1750	1590	1410	1240	1080	920
					749			**1960**	**1680**	**1530**	**1360**	**1190**	**1040**	**885**
					29 1/2	2-6"	—	2420	2080	1890	1670	1480	1280	1090
					749	**152 CL**		**2330**	**2000**	**1820**	**1610**	**1420**	**1230**	**1050**
					19 1/2	1	—	1440	1240	1120	990	880	760	650
					495			**1380**	**1190**	**1080**	**952**	**846**	**731**	**625**
					25 1/2	1	—	1570	1350	1220	1080	960	830	710
					648			**1510**	**1300**	**1170**	**1040**	**923**	**798**	**683**
1 1/4	4CA4440	4 1/4	40	.020	25 1/2	2-6"	—	2080	1790	1620	1440	1270	1100	940
32		**108 Sq.**	**131**	**.51**	**648**	**152 CL**		**2000**	**1720**	**1560**	**1380**	**1220**	**1060**	**904**
					29 1/2	1	—	1700	1460	1330	1170	1040	900	770
					749			**1640**	**1400**	**1280**	**1120**	**1000**	**865**	**740**
					29 1/2	2-6"	—	2320	2000	1810	1600	1420	1230	1040
					749	**152 CL**		**2230**	**1920**	**1740**	**1540**	**1360**	**1180**	**1000**
					19 1/2	1	—	1560	1340	1220	1080	950	830	700
					495			**1500**	**1290**	**1170**	**1040**	**914**	**798**	**673**
					25 1/2	1	—	1810	1560	1410	1250	1100	960	810
					648			**1740**	**1500**	**1360**	**11200**	**1060**	**923**	**779**
1 1/4	4CA4450	4 1/4	50	.020	25 1/2	2-6"	—	2070	1780	1610	1430	1260	1100	930
32		**108 Sq.**	**164**	**.51**	**648**	**152 CL**		**1990**	**1710**	**1550**	**1380**	**1210**	**1060**	**894**
					29 1/2	1	—	2000	1720	1560	1380	1220	1060	900
					749			**1920**	**1650**	**1500**	**1330**	**1170**	**1020**	**865**
					29 1/2	2-6"	—	2380	2050	1860	1640	1450	1260	1070
					749	**152 CL**		**2290**	**1970**	**1790**	**1580**	**1390**	**1210**	**1030**

Mechanical Specifications

Table MS-7 — Ratings, 5 5/16" (135 mm) Deep, Type DS Enclosure With Steel Elements

I.P.S. Size Inches **mm**	Catalog Desig.	Fin Size In. **mm**	Fin Per Ft. **Per M**	Fin Thickness In. **mm**	Encl. Height Inches **mm**	Tiers and Centers Inches **mm**	Mtg. Height Inches **mm**	Steam Capacity Per Ft. - 1 Psi at 65°F Air **Per Meter - 6.895 kPa at 18.3°C Air**	Hot Water (Avg.) 200°F **93°C** Factor .86	190°F **88°C** .78	180°F **82°C** .69	170°F **77°C** .61	160°F **71°C** .53	150°F **66°C** .45
					19 1/2	1	—	1210	1040	940	830	740	640	540
					495			**1160**	**1000**	**904**	**798**	**712**	**615**	**519**
					25 1/2	1	—	1280	1100	1000	880	780	680	580
					648			**1230**	**1060**	**962**	**846**	**750**	**654**	**558**
1 1/4	4ST4432	4 1/4	32	.032	25 1/2	2-6"	—	1920	1650	1500	1320	1170	1020	860
32		**108 Sq.**	**105**	**.81**	**648**	**152 CL**		**1850**	**1590**	**1440**	**1270**	**1120**	**981**	**827**
					29 1/2	1	—	1350	1160	1050	930	820	720	610
					749			**1300**	**1120**	**1010**	**894**	**789**	**692**	**587**
					29 1/2	2-6"	—	2030	1750	1580	1400	1240	1080	910
					749	**152 CL**		**1950**	**1680**	**1520**	**1350**	**1190**	**1040**	**875**
					19 1/2	1	—	1360	1170	1060	940	830	720	610
					495			**1310**	**1120**	**1020**	**904**	**798**	**692**	**587**
					25 1/2	1	—	1470	1260	1150	1010	900	780	660
					648			**1410**	**1210**	**1110**	**971**	**865**	**750**	**635**
1 1/4	4ST4440	4 1/4	40	.032	25 1/2	2-6"	—	2090	1800	1630	1440	1270	1110	940
32		**108 Sq.**	**131**	**.81**	**648**	**152 CL**		**2010**	**1730**	**1570**	**1380**	**1220**	**1070**	**904**
					29 1/2	1	—	1560	1340	1220	1080	950	830	700
					749			**1500**	**1290**	**1170**	**1040**	**914**	**798**	**673**
					29 1/2	2-6"	—	2240	1930	1750	1550	1370	1190	1010
					749	**152 CL**		**2150**	**1860**	**1680**	**1490**	**1320**	**1140**	**971**

*Note: NPT threads furnished on steel elements. Please use domestic fittings for proper installation.

Mechanical Specifications

Table MS-8 — Ratings, 5 5/16″ (135 mm) Deep, Type DS Enclosure with Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
					Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.89 kPa at 18.3°C Air**		Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature**												
		1	DS19	21 5/8	3.13	750	790	715	645	585	520	460	400	340	300	250	195	150	115
				549	**34**	**720**	**755**	**685**	**620**	**560**	**495**	**440**	**380**	**325**	**290**	**240**	**185**	**145**	**110**
		1	DS25	27 5/8	3.38	810	850	770	695	630	560	493	430	365	325	265	210	160	120
				702	**36**	**780**	**820**	**740**	**670**	**610**	**540**	**475**	**415**	**350**	**310**	**255**	**205**	**155**	**115**
		1	DS29	31 5/8	3.63	870	915	825	750	680	600	530	460	390	350	285	225	175	130
	40			**803**	**39**	**835**	**875**	**795**	**720**	**650**	**575**	**510**	**445**	**375**	**335**	**275**	**215**	**165**	**125**
	131 m	2*	DS25	27 5/8	4.92	1180	1240	1120	1015	920	815	720	625	539	470	390	305	235	175
				702	**53**	**1130**	**1185**	**1075**	**970**	**880**	**780**	**690**	**600**	**510**	**450**	**375**	**295**	**225**	**170**
3/4″ CA		2*	DS29	31 5/8	5.54	1330	1395	1265	1145	1035	920	810	705	600	530	440	345	265	200
19 mm				**803**	**60**	**1280**	**1345**	**1215**	**1100**	**1000**	**885**	**780**	**680**	**575**	**510**	**420**	**335**	**255**	**190**
Copper Tube		1	DS19	21 5/8	3.96	950	1000	905	815	740	655	580	505	430	380	315	245	190	145
Alum. Fins				**549**	**43**	**910**	**955**	**865**	**785**	**710**	**630**	**555**	**480**	**410**	**365**	**399**	**235**	**180**	**135**
Fins 3 1/4″ Sq.		1	DS25	27 5/8	4.5	1080	1135	1025	930	840	745	660	570	485	430	355	280	215	160
83 mm Sq.				**702**	**48**	**1040**	**1090**	**990**	**895**	**810**	**720**	**635**	**550**	**470**	**415**	**345**	**270**	**210**	**155**
Thickness .0135″		1	DS29	31 5/8	4.96	1190	1250	1130	1025	930	820	725	630	535	475	395	310	240	180
.34 mm	50			**803**	**53**	**1140**	**1195**	**1085**	**980**	**890**	**785**	**695**	**605**	**515**	**455**	**375**	**295**	**230**	**170**
	164 m	2*	DS25	27 5/8	5.08	1220	1280	1160	1050	950	840	745	645	550	490	405	315	245	185
				702	**55**	**1170**	**1230**	**1110**	**1005**	**915**	**805**	**715**	**620**	**525**	**470**	**385**	**305**	**235**	**175**
		2*	DS29	31 5/8	5.79	1390	1460	1320	1195	1085	960	850	735	625	555	460	360	280	210
				803	**62**	**1335**	**1400**	**1270**	**1150**	**1040**	**920**	**815**	**710**	**600**	**535**	**440**	**345**	**265**	**200**
		1	DS19	21 5/8	4.33	1040	1090	990	895	810	720	635	550	470	415	345	270	210	155
				549	**47**	**1000**	**1050**	**950**	**860**	**780**	**690**	**610**	**530**	**450**	**400**	**330**	**260**	**200**	**150**
		1	DS25	27 5/8	4.96	1190	1250	1130	1025	930	820	725	630	535	475	395	310	240	180
				702	**53**	**1140**	**1195**	**1085**	**980**	**890**	**785**	**695**	**605**	**515**	**455**	**375**	**295**	**230**	**170**
		1	DS29	31 5/8	5.42	1300	1365	1235	1120	1015	895	795	690	585	520	430	340	260	195
	58			**803**	**58**	**1250**	**1315**	**1190**	**1075**	**975**	**865**	**765**	**665**	**565**	**500**	**415**	**325**	**250**	**190**
	190 m	2*	DS25	27 5/8	5.5	1320	1385	1255	1135	1030	910	805	700	595	530	435	345	265	200
				702	**59**	**1270**	**1335**	**1205**	**1090**	**990**	**875**	**775**	**675**	**570**	**510**	**420**	**330**	**255**	**190**
		2*	DS29	31 5/8	6.21	1490	1565	1415	1280	1160	1030	910	790	670	595	490	385	300	225
				803	**67**	**1430**	**1500**	**1360**	**1230**	**1115**	**985**	**870**	**760**	**645**	**570**	**470**	**370**	**285**	**215**

*6″ (152 mm) Centers
Dimensions in **bold** indicate metric units.
Ratings not IBR approved.

Mechanical Specifications

Table MS-9 — Ratings, 5 5/16" (135 mm) Deep, Type DS Enclosure with Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.89 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
		1	DS19	21 5/8	3.25	780	820	740	670	610	540	475	415	350	310	255	205	155	115
				549	**35**	**750**	**790**	**715**	**645**	**585**	**520**	**460**	**400**	**340**	**300**	**250**	**195**	**150**	**115**
		1	DS25	27 5/8	3.5	840	880	800	720	655	580	510	445	380	335	275	220	170	125
				702	**38**	**810**	**850**	**770**	**695**	**630**	**560**	**495**	**430**	**365**	**325**	**265**	**210**	**160**	**120**
		1	DS29	31 5/8	3.79	910	955	865	785	710	630	555	480	410	365	300	235	180	135
	40			**803**	**41**	**875**	**920**	**830**	**755**	**685**	**605**	**535**	**465**	**395**	**350**	**290**	**230**	**175**	**130**
	131 m	2*	DS25	27 5/8	5.25	1260	1325	1195	1085	985	870	770	670	565	505	415	330	250	190
				702	**57**	**1210**	**1270**	**1150**	**1040**	**945**	**835**	**740**	**640**	**545**	**485**	**400**	**315**	**240**	**180**
1" CA		2*	DS29	31 5/8	5.83	1400	1470	1330	1205	1090	965	855	740	630	560	460	365	280	210
25 mm				**803**	**63**	**1345**	**1410**	**1280**	**1155**	**1050**	**930**	**820**	**715**	**605**	**540**	**445**	**350**	**270**	**200**
Copper Tube		1	DS19	21 5/8	3.83	920	965	875	790	720	635	560	490	415	370	305	240	185	140
Alum. Fins				**549**	**41**	**885**	**930**	**840**	**760**	**690**	**610**	**540**	**470**	**400**	**355**	**290**	**230**	**175**	**135**
Fins 3 1/4" Sq.		1	DS25	27 5/8	4.38	1050	1105	1000	905	820	725	640	555	475	420	345	275	210	160
83 mm Sq.				**702**	**47**	**1010**	**1060**	**960**	**870**	**790**	**695**	**615**	**535**	**455**	**405**	**335**	**265**	**200**	**150**
Thickness .0135"		1	DS29	31 5/8	4.88	1170	1230	1110	1005	915	805	715	620	525	470	385	305	235	175
.34 mm	50			**803**	**53**	**1125**	**1180**	**1070**	**970**	**880**	**775**	**685**	**595**	**505**	**450**	**370**	**295**	**225**	**170**
	164 m	2*	DS25	27 5/8	5.54	1330	1395	1265	1145	1035	920	810	705	600	530	440	345	265	200
				702	**60**	**1280**	**1345**	**1215**	**1100**	**1000**	**885**	**780**	**680**	**575**	**510**	**420**	**335**	**255**	**190**
		2*	DS29	31 5/8	6.38	1530	1605	1455	1315	1195	1055	935	810	690	610	505	400	305	230
				803	**69**	**1470**	**1545**	**1395**	**1265**	**1145**	**1015**	**895**	**780**	**660**	**590**	**485**	**380**	**295**	**220**
		1	DS19	21 5/8	4.5	1080	1135	1025	930	840	745	660	570	485	430	355	280	215	160
				549	**48**	**1040**	**1090**	**990**	**895**	**810**	**720**	**635**	**550**	**470**	**415**	**345**	**270**	**210**	**155**
		1	DS25	27 5/8	4.96	1190	1250	1130	1025	930	820	725	630	535	475	395	310	240	180
				702	**53**	**1140**	**1195**	**1085**	**980**	**890**	**785**	**695**	**605**	**515**	**455**	**375**	**295**	**230**	**170**
		1	DS29	31 5/8	5.79	1390	1460	1320	1195	1085	960	850	735	625	555	460	360	280	210
	58			**803**	**62**	**1335**	**1400**	**1270**	**1150**	**1040**	**920**	**815**	**710**	**600**	**535**	**440**	**345**	**265**	**200**
	190 m	2*	DS25	27 5/8	5.92	1420	1490	1350	1220	1110	980	865	755	640	570	470	370	285	215
				702	**64**	**1365**	**1435**	**1295**	**1175**	**1065**	**940**	**835**	**725**	**615**	**545**	**450**	**355**	**275**	**205**
		2*	DS29	31 5/8	6.75	1620	1700	1540	1395	1265	1120	990	860	730	650	535	420	325	245
				803	**73**	**1560**	**1640**	**1480**	**1340**	**1215**	**1075**	**950**	**825**	**700**	**625**	**515**	**405**	**310**	**235**

*6" (152 mm) Centers
Dimensions in **bold** indicate metric units.
Ratings not IBR approved.

Mechanical Specifications

Table MS-10 — Ratings, 5 5/16″ (135 mm) Deep, Type DS Enclosure with Copper/Aluminum Elements

Element	Fin Series Per Foot **Per Meter**	Tiers	Encl.	Install. Height Inches **mm**	Steam Capacity Per Ft.-1 Psi at 65°F Air **Per Meter - 6.89 kPa at 18.3°C Air** EDR Sq. Ft. **Sq. M**	Btu/Hr./Ft. **Watts/Meter**	Hot Water Capacity Btu/Hr./Ft. — At 65°F Air, Average Water Temperature **Watts/Meter — At 18.3°C Air, Average Water Temperature** 220°F **104°C**	210°F **99°C**	200°F **93°C**	190°F **88°C**	180°F **82°C**	170°F **77°C**	160°F **71°C**	150°F **66°C**	140°F **60°C**	130°F **54°C**	120°F **49°C**	110°F **43°C**	100°F **38°C**
							IBR Factor — Steam to Hot Water												
		1	DS19	21 5/8	3.33	800	840	760	690	625	550	490	425	360	320	265	210	160	120
				549	**36**	**770**	**810**	**730**	**660**	**600**	**530**	**470**	**410**	**345**	**310**	**255**	**200**	**155**	**115**
		1	DS25	27 5/8	3.54	850	895	810	730	665	585	520	450	385	340	280	220	170	130
				702	**38**	**815**	**855**	**775**	**700**	**635**	**560**	**495**	**430**	**365**	**325**	**270**	**210**	**165**	**120**
		1	DS29	31 5/8	3.83	920	965	875	790	720	635	560	490	415	370	305	240	185	140
	40			**803**	**41**	**885**	**930**	**840**	**760**	**690**	**610**	**540**	**470**	**400**	**355**	**290**	**230**	**175**	**135**
	131 m	2*	DS25	27 5/8	5.21	1250	1315	1190	1075	975	865	765	665	565	500	415	325	250	190
				702	**56**	**1200**	**1260**	**1140**	**1030**	**935**	**830**	**730**	**635**	**540**	**480**	**395**	**310**	**240**	**180**
1 1/4″ CA		2*	DS29	31 5/8	5.79	1390	1460	1320	1195	1085	960	850	735	625	555	460	360	280	210
32 mm				**803**	**62**	**1335**	**1400**	**1270**	**1150**	**1040**	**920**	**815**	**710**	**600**	**535**	**440**	**345**	**265**	**200**
Copper Tube		1	DS19	21 5/8	4.08	980	1030	930	845	765	675	600	520	440	390	325	255	195	145
Alum. Fins				**549**	**44**	**940**	**985**	**895**	**810**	**735**	**650**	**575**	**500**	**425**	**375**	**310**	**245**	**190**	**140**
Fins 3 1/4″ Sq.		1	DS25	27 5/8	4.42	1060	1115	1005	910	825	730	645	560	475	425	350	275	210	160
83 mm Sq.				**702**	**48**	**1020**	**1070**	**970**	**875**	**795**	**705**	**620**	**540**	**460**	**410**	**335**	**265**	**205**	**155**
Thickness .0135″		1	DS29	31 5/8	4.92	1180	1240	1120	1015	920	815	720	625	530	470	390	305	235	175
.34 mm	50			**803**	**53**	**1130**	**1185**	**1075**	**970**	**880**	**780**	**690**	**600**	**510**	**450**	**375**	**295**	**225**	**170**
	164 m	2*	DS25	27 5/8	5.42	1300	1365	1235	1120	1015	895	795	690	585	520	430	340	260	195
				702	**58**	**1250**	**1315**	**1190**	**1075**	**975**	**865**	**765**	**665**	**565**	**500**	**415**	**325**	**250**	**190**
		2*	DS29	31 5/8	6.21	1490	1565	1415	1280	1160	1030	910	790	670	595	490	385	300	225
				803	**67**	**1430**	**1500**	**1360**	**1230**	**1115**	**985**	**870**	**760**	**645**	**570**	**470**	**370**	**285**	**215**
		1	DS19	21 5/8	4.33	1040	1090	990	895	810	720	635	550	470	415	345	270	210	155
				549	**47**	**1000**	**1050**	**950**	**860**	**780**	**690**	**610**	**530**	**450**	**400**	**330**	**260**	**200**	**150**
		1	DS25	27 5/8	5.0	1200	1260	1140	1030	935	830	730	635	540	480	395	310	240	180
				702	**54**	**1150**	**1210**	**1095**	**990**	**895**	**795**	**700**	**610**	**520**	**460**	**380**	**300**	**230**	**175**
		1	DS29	31 5/8	5.79	1390	1460	1320	1195	1085	960	850	735	625	555	460	360	280	210
	58			**803**	**62**	**1335**	**1400**	**1270**	**1150**	**1040**	**920**	**815**	**710**	**600**	**535**	**440**	**345**	**265**	**200**
	190 m	2*	DS25	27 5/8	5.67	1360	1430	1290	1170	1060	940	830	720	610	545	450	355	270	205
				702	**61**	**1310**	**1375**	**1245**	**1125**	**1020**	**905**	**800**	**695**	**590**	**525**	**430**	**340**	**260**	**195**
		2*	DS29	31 5/8	6.5	1560	1640	1480	1340	1215	1075	950	825	700	625	515	405	310	235
				803	**70**	**1500**	**1575**	**1425**	**1290**	**1170**	**1035**	**915**	**795**	**675**	**600**	**495**	**390**	**300**	**225**

*6″ (152 mm) Centers
Dimensions in **bold** indicate metric units.
Ratings not IBR approved.

Features and Benefits

Security Wall Fin

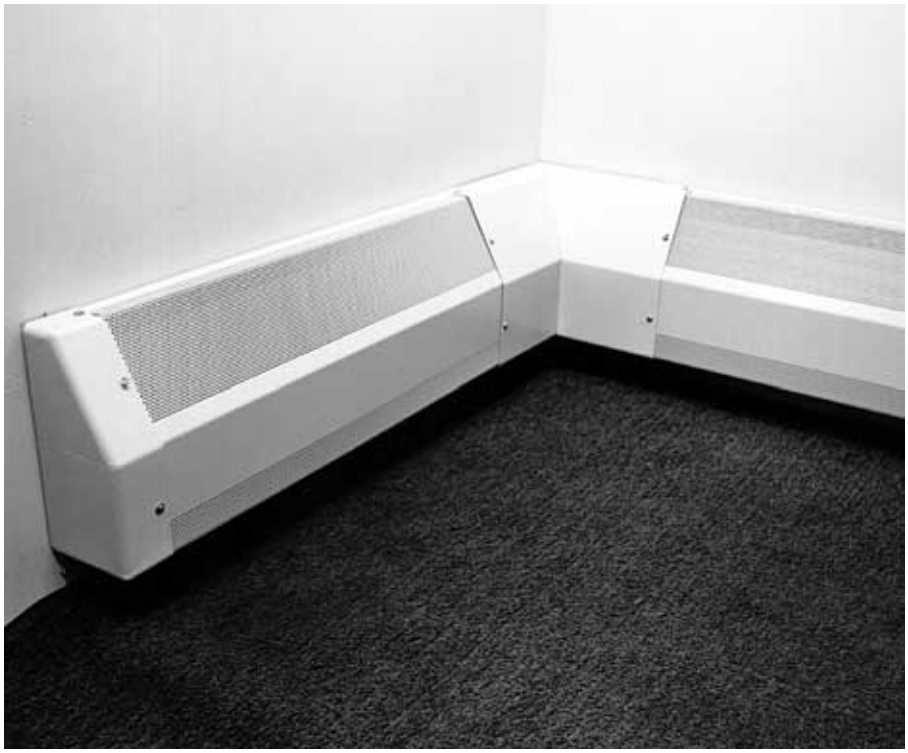
The Trane hydronic security wall fin enclosures have been designed for natural convection in slope top (Type S) and flat top (Type F) configurations in 12″ (305 mm) and 18″ (457 mm) heights with a depth of 5 5/16″ (135 mm), primarily for use in maximum security applications such as prisons and mental institutions.

Security wall fin is also recommended for use in schools, dormitories, nursing homes, athletic facilities, day care centers, detention homes, psychiatric centers, public type buildings and other heavy abuse areas.

Wrap-Around Design
Each enclosure's top/front/bottom panel is of one-piece full wrap-around design for complete engagement with the wall to help prevent access to the inside of the unit. All enclosure panels are manufactured with 1/8″ (3 mm) diameter holes on 3/16″ (5 mm) staggered centers for a partial perforated (inlet and outlet) panel with internal interlocking slip joints. Optional fully-perforated enclosures of the entire panel are available with an intermediate overlapping wall sleeve with pre- punched fastener holes for panel-to- panel alignment and fastening.

Simple installation, made of 14-gauge (1.9 mm thickness) steel, and durability are made possible by a continuous partial back plate/mounting strip. A full back plate/mounting strip manufactured from 14-gauge (1.9 mm thickness) steel is optional.

Durable Construction
A variety of heating elements is available along with a complete line of accessories. Manufactured from 14-gauge (1.9 mm thickness) steel for strength, these accessories allow for wall-to-wall installation that is architecturally compatible with most interior designs.



Heating elements or return and supply piping are secured to the wall with wall type element brackets manufactured of 14-gauge (1.9 mm thickness) galvaneal Steel with channel-formed edges for rigidity. Each wall bracket is furnished with galvanized element cradles and nylon inserts with snap-in rust-resistant nickel-chromium plated ball bearings for silent glide operation of the heating element.

Rigid front panels are constructed of 14-gauge (1.9 mm thickness) or 12- gauge (2.7 mm thickness) steel.

Vandal-Resistant
The security enclosure offers vandal-resistant construction.

Tamper resistant helps prevent vandals from concealing undesirable or hazardous items within the enclosure.

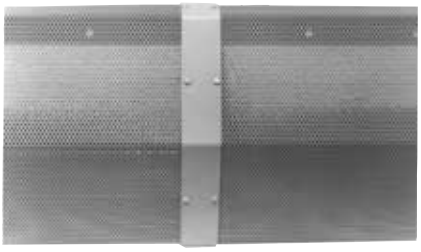
Clean, Even Heat
Only the air within the room is recirculated, so walls and furnishings stay cleaner.

A baked-on commercial primer paint is standard.

Attractive
Available with six optional baked-on enamel color finishes chosen from Trane's Color Selection Chart UNT-S-10.

Accessories

All 14-Gauge



2″ Joiner Piece
(Fastener Holes Pre-punched)
For use with Fully Perforated 14-gauge and 12-gauge enclosures only.

End Trim
(No Fastener Holes)

End Cap

Inside or Outside Corder

Model Number Description

Security Wall Fin

Digits	123		45		67		89
	S12	-	SP	-	14	-	E

Digits 1 — Enclosure Type
S = Slope Top
F = Flat Top

Digit 2 and 3 — Enclosure Size
12 = 12″ High x 5 5/16″ Deep*
18 = 18″ High x 5 5/16″ Deep**

Digit 4 — Type Enclosure
S = Security

Digit 5 — Perforation Type
P = Partially Perforated
F = Fully Perforated

Digits 6 and 7 — Gauge
14 = 14-gauge
12 = 12-gauge

Digits 8 and 9 — Enclosure/Front Panel
E = Complete Enclosure
FP = Front Panel Only

Note: (E) = 14-Gauge or 12-Gauge front panel with 14-gauge partial back plate/mounting strip and wall mounting element brackets.

*For single tier of element only.

**Ok for single or two tier element installations.

Finned Tube Radiation
Model S and F — Security Enclosures Partially Perforated
Capacity Data

Table PD-1 — Copper/Aluminum Elements — Btu/Hour/Foot

Copper/Aluminum Elements with Partially Perforated Enclosures						Steam Rating 215°F	Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
			S12-SP	1	16	1310	1380	1250	1130	1020	900	800	690	590	520	430
			S18-SP	1	22	1550	1630	1480	1330	1210	1070	950	820	700	620	510
3/4″	4 1/4″x3 5/8″	40	S18-SP	2-6″	22	2270	2390	2160	1950	1770	1570	1380	1200	1020	910	750
			F12-SP	1	16	1200	1260	1140	1030	930	830	730	640	540	480	400
			F18-SP	1	22	1400	1470	1330	1200	1090	970	850	740	630	560	460
			F18-SP	2-6″	22	2080	2190	1980	1790	1620	1440	1270	1100	940	830	690
			S12-SP	1	16	1430	1500	1360	1230	1120	990	870	760	640	570	470
			S18-SP	1	22	*1790	1880	1700	1540	1400	1240	1090	950	810	720	590
3/4″	4 1/4″x3 5/8″	50	S18-SP	2-6″	22	2400	2520	2280	2060	1870	1660	1460	1270	1080	960	790
			F12-SP	1	16	1350	1420	1280	1160	1050	930	820	720	610	540	450
			F18-SP	1	22	1610	1690	1530	1380	1260	1110	980	850	720	640	530
			F18-SP	2-6″	22	2290	2400	2180	1970	1790	1580	1400	1210	1030	920	760
			S12-SP	1	16	1490	1560	1420	1280	1160	1030	910	790	670	600	490
			S18-SP	1	22	1730	1820	1640	1490	1350	1190	1060	920	780	690	570
1″	4 1/4″x4 1/4″	40	S18-SP	2-6″	22	2390	2510	2270	2060	1860	1650	1460	1270	1080	960	790
			F12-SP	1	16	1360	1430	1290	1170	1060	940	830	720	610	540	450
			F18-SP	1	22	1550	1630	1470	1330	1210	1070	950	820	700	620	510
			F18-SP	2-6″	22	2290	2400	2180	1970	1790	1580	1400	1210	1030	920	760
			S12-SP	1	16	1570	1650	1490	1350	1220	1080	960	830	710	630	520
			S18-SP	1	22	1980	2080	1880	1700	1540	1370	1210	1050	890	790	650
1″	4 1/4″x4 1/4″	50	S18-SP	2-6″	22	2260	2370	2150	1940	1760	1560	1380	1200	1020	900	750
			F12-SP	1	16	1470	1540	1400	1260	1150	1010	900	780	660	590	480
			F18-SP	1	22	1770	1860	1680	1520	1380	1220	1080	940	800	710	580
			F18-SP	2-6″	22	2150	2260	2040	1850	1680	1480	1310	1140	970	860	710
			S12-SP	1	16	1470	1540	1400	1260	1150	1010	900	780	660	590	480
			S18-SP	1	22	1700	1790	1620	1460	1330	1170	1040	900	770	680	560
1 1/4″	4 1/4″x4 1/4″	40	S18-SP	2-6″	22	*2350	2470	2230	2020	1830	1620	1430	1250	1060	940	780
			F12-SP	1	16	1340	1410	1270	1150	1050	920	820	710	600	540	440
			F18-SP	1	22	1530	1610	1450	1320	1190	1060	930	810	690	610	500
			F18-SP	2-6″	22	2250	2360	2140	1940	1760	1550	1370	1190	1010	900	740
			S12-SP	1	16	*1540	1620	1460	1320	1200	1060	940	820	690	620	510
			S18-SP	1	22	*1940	2040	1840	1670	1510	1340	1180	1030	870	780	640
1 1/4″	4 1/4″x4 1/4″	50	S18-SP	2-6″	22	2220	2330	2110	1910	1730	1530	1350	1180	1000	890	730
			F12-SP	1	16	1450	1520	1380	1250	1130	1000	880	770	650	580	480
			F18-SP	1	22	1740	1830	1650	1500	1360	1200	1060	920	780	700	570
			F18-SP	2-6″	22	2110	2220	2000	1810	1650	1460	1290	1120	950	840	700

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 18″ high enclosures installed on 6″ center lines.

Table PD-2 — Copper/Aluminum Elements — Watts/Meter

Copper/Aluminum Elements with Partially Perforated Enclosures						Steam Rating 102°C	Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
			S12-SP	1	406	1260	1330	1200	1090	980	870	770	660	570	500	410
			S18-SP	1	559	1490	1570	1420	1280	1160	1030	910	790	670	600	490
19 mm	108 x 92	131	S18-SP	2-152 mm	559	2180	2300	2080	1870	1700	1510	1330	1150	980	870	720
			F12-SP	1	406	1150	1210	1100	990	890	800	700	620	520	460	380
			F18-SP	1	559	1350	1410	1280	1150	1050	930	820	710	610	540	440
			F18-SP	2-152 mm	559	2000	2110	1900	1720	1560	1380	1220	1060	900	800	660
			S12-SP	1	406	1370	1440	1310	1180	1080	950	840	730	620	550	450
			S18-SP	1	559	*1720	1810	1630	1480	1350	1190	1050	910	780	690	590
19 mm	108 x 92	164	S18-SP	2-152 mm	559	2310	2420	2190	1980	1800	1600	1400	1220	1040	920	760
			F12-SP	1	406	1300	1360	1230	1120	1010	890	790	690	590	520	430
			F18-SP	1	559	1550	1620	1470	1330	1210	1070	940	820	690	620	510
			F18-SP	2-152 mm	559	2200	2310	2100	1890	1720	1520	1350	1160	990	880	730
			S12-SP	1	406	1430	1500	1370	1230	1120	990	870	760	640	580	470
			S18-SP	1	559	1660	1750	1580	1430	1300	1140	1020	880	750	660	550
25 mm	108 x 108	131	S18-SP	2-152 mm	559	2300	2410	2180	1980	1790	1590	1400	1220	1040	920	760
			F12-SP	1	406	1310	1370	1240	1120	1020	900	800	690	590	520	430
			F18-SP	1	559	1490	1570	1410	1280	1160	1030	910	790	670	600	490
			F18-SP	2-152 mm	559	2200	2310	2100	1890	1720	1520	1350	1160	990	880	730
			S12-SP	1	406	1510	1590	1430	1300	1170	1040	920	800	680	610	500
			S18-SP	1	559	1900	2000	1810	1630	1480	1320	1160	1010	860	760	620
25 mm	108 x 108	164	S18-SP	2-152 mm	559	2170	2280	2070	1860	1690	1500	1330	1150	980	870	720
			F12-SP	1	406	1410	1480	1350	1210	1110	970	870	750	630	570	460
			F18-SP	1	559	1700	1790	1610	1460	1330	1170	1040	900	770	680	560
			F18-SP	2-152 mm	559	2070	2170	1960	1780	1610	1420	1260	1100	930	830	680
			S12-SP	1	406	1410	1480	1350	1210	1110	970	870	750	630	570	460
			S18-SP	1	559	1630	1720	1560	1400	1280	1120	1000	870	740	650	540
32 mm	108 x 108	131	S18-SP	2-152 mm	559	*2260	2370	2140	1940	1760	1560	1370	1200	1020	900	750
			F12-SP	1	406	1290	1360	1220	1110	1010	880	790	680	580	520	420
			F18-SP	1	559	1470	1550	1390	1270	1140	1020	890	780	660	590	480
			F18-SP	2-152 mm	559	2160	2270	2060	1860	1690	1490	1320	1140	970	870	710
			S12-SP	1	406	*1480	1560	1400	1270	1150	1020	900	790	660	600	490
			S18-SP	1	559	*1860	1960	1760	1610	1450	1290	1130	990	840	750	620
32 mm	108 x 108	164	S18-SP	2-152 mm	559	2130	2240	2030	1840	1660	1470	1300	1130	960	860	700
			F12-SP	1	406	1390	1460	1330	1200	1090	960	850	740	620	560	460
			F18-SP	1	559	1670	1760	1590	1440	1310	1150	1020	880	750	670	550
			F18-SP	2-152 mm	559	2030	2130	1920	1740	1590	1400	1240	1080	910	810	670

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 457 mm high enclosures installed on 152 mm center lines.

Table PD-3 — Steel Tube/Fin Elements — Btu/Hour/Foot

Steel Tube/Fin Elements with Partially Perforated Enclosures							Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Steam Rating 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
			S12-SP	1	16	1280	1340	1220	1100	1000	880	780	680	580	510	420
			S18-SP	1	22	1380	1450	1310	1190	1080	950	840	730	620	550	460
1¼"	4¼"x4 ¼"	40	S18-SP	2-6"	22	2140	2250	2030	1840	1670	1480	1310	1130	960	860	710
			F12-SP	1	16	1150	1210	1090	990	900	790	700	610	520	460	380
			F18-SP	1	22	1230	1290	1170	1060	960	850	750	650	550	490	410
			F18-SP	2-6"	22	1980	2080	1880	1700	1540	1370	1210	1050	890	790	650
			S12-SP	1	16	1100	1160	1050	950	860	760	670	580	500	440	360
			S18-SP	1	22	1180	1240	1120	1010	920	810	720	630	530	470	390
1¼"	4 ¼"x4¼"	32	S18-SP	2-6"	22	1840	1930	1750	1580	1440	1270	1120	980	830	740	610
			F12-SP	1	16	990	1040	940	850	770	680	600	520	450	400	330
			F18-SP	1	22	1060	1110	1010	910	830	730	650	560	480	420	350
			F18-SP	2-6"	22	1700	1790	1620	1460	1330	1170	1040	900	770	680	560

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 18" high enclosures installed on 6" center lines.

Table PD-4— Steel Tube/Fin Elements — Watts/Meter

Steel Tube/Fin Elements with Partially Perforated Enclosures							Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Steam Rating 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
			S12-SP	1	406	1230	1290	1170	1060	960	850	750	650	560	490	400
			S18-SP	1	559	1330	1390	1260	1140	1040	910	810	700	600	530	440
32 mm	108 x 108	131	S18-SP	2-152 mm	559	2060	2160	1950	1770	1600	1420	1260	1090	920	830	680
			F12-SP	1	406	1110	1160	1050	950	870	760	670	590	500	440	370
			F18-SP	1	559	1180	1240	1120	1020	920	820	720	620	530	470	390
			F18-SP	2-152 mm	559	1900	2000	1810	1630	1480	1320	1160	1010	860	760	620
			S12-SP	1	406	1060	1120	1010	910	830	730	640	560	480	420	350
			S18-SP	1	559	1130	1190	1080	970	880	780	690	610	510	450	370
32 mm	108 x 108	105	S18-SP	2-152 mm	559	1770	1860	1680	1520	1380	1220	1080	940	800	710	590
			F12-SP	1	406	950	1000	900	820	740	650	580	500	430	380	320
			F18-SP	1	559	1020	1070	970	870	800	700	620	540	460	400	340
			F18-SP	2-152 mm	559	1630	1720	1560	1400	1280	1120	1000	870	740	650	540

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 457 mm high enclosures installed on 152 mm center lines.

Finned Tube Radiation
Model S and F — Security Enclosures Fully Perforated
Capacity Data

Table PD-5— Copper/Aluminum Elements — Btu/Hour/Foot

Copper/Aluminum Elements with Fully Perforated Enclosures						Steam Rating 215°F	Hot Water									
							220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Factor 1.00	Factor									
							1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
¾″	4¼″ x 3⅝″	40	S12-SF	1	16	1240	1300	1180	1070	970	860	760	660	560	500	410
			S18-SF	1	22	1290	1350	1230	1110	1010	890	790	680	580	5204	30
			S18-SF	2-6″	22	2230	2340	2120	1920	1740	1540	1360	1180	1000	890	740
			F12-SF	1	16	1140	1200	1080	980	890	790	700	600	510	460	380
			F18-SF	1	22	1170	1230	1110	1010	910	810	710	620	530	470	390
			F18-SF	2-6″	22	2040	2140	1940	1750	1590	1410	1240	1080	920	820	670
¾″	4¼″ x 3⅝″	50	S12-SF	1	16	1350	1420	1280	1160	1050	930	820	720	610	540	450
			S18-SF	1	22	1400	1470	1330	1200	1090	970	850	740	630	560	460
			S18-SF	2-6″	22	2390	2510	2270	2060	1860	1650	1460	1270	1080	960	790
			F12-SF	1	16	1270	1330	1210	1090	990	880	770	670	570	510	420
			F18-SF	1	22	1290	1350	1230	1110	1010	890	790	680	580	520	430
			F18-SF	2-6″	22	2280	2390	2170	1960	1780	1570	1390	1210	1030	910	750
1″	4¼″ x 4¼″	40	S12-SF	1	16	1430	1500	1360	1230	1120	990	870	760	640	570	470
			S18-SF	1	22	1480	1550	1410	1270	1150	1020	900	780	670	590	490
			S18-SF	2-6″	22	2560	2690	2430	2200	2000	1770	1560	1360	1150	1020	840
			F12-SF	1	16	1310	1380	1240	1130	1020	900	800	690	590	520	430
			F18-SF	1	22	1330	1400	1260	1140	1040	920	810	700	600	530	440
			F18-SF	2-6″	22	2450	2570	2330	2110	1910	1690	1490	1300	1100	980	810
1″	4¼″ x 4¼″	50	S12-SF	1	16	1470	1540	1400	1260	1150	1010	900	780	660	590	490
			S18-SF	1	22	1530	1610	1450	1320	1190	1060	930	810	690	610	500
			S18-SF	2-6″	22	2590	2720	2460	2230	2020	1790	1580	1370	1170	1040	850
			F12-SF	1	16	1380	1450	1310	1190	1080	950	840	730	620	550	460
			F18-SF	1	22	1420	1490	1350	1220	1110	980	870	750	640	570	470
			F18-SF	2-6″	22	2460	2580	2340	2120	1920	1700	1500	1300	1110	980	810
1¼″	4¼″ x 4 /4″	40	S12-SF	1	16	1400	1470	1330	1200	1090	970	850	740	630	560	460
			S18-SF	1	22	1460	1530	1390	1260	1140	1010	890	770	660	580	480
			S18-SF	2-6″	22	*2520	2650	2390	2170	1970	1740	1540	1340	1130	1010	830
			F12-SF	1	16	1280	1340	1220	1100	1000	880	780	680	580	510	420
			F18-SF	1	22	1310	1380	1240	1130	1020	900	800	690	590	520	430
			F18-SF	2-6″	22	2410	2530	2290	2070	1880	1660	1470	1280	1080	960	800
1¼″	4¼″ x 4 /4″	50	S12-SF	1	16	1440	1510	1370	1240	1120	990	880	760	650	580	480
			S18-SF	1	22	1500	1580	1430	1290	1170	1040	920	800	680	600	500
			S18-SF	2-6″	22	2550	2680	2420	2190	1990	1760	1560	1350	1150	1020	840
			F12-SF	1	16	1360	1430	1290	1170	1060	940	830	720	610	540	450
			F18-SF	1	22	1400	1470	1330	1200	1090	970	850	740	630	560	460
			F18-SF	2-6″	22	2420	2540	2300	2080	1890	1670	1480	1280	1090	970	800

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 18″ high enclosures installed on 6″ center lines.

Finned Tube Radiation
Model S and F — Security Enclosures Fully Perforated
Capacity Data

Table PD-6 — Copper/Aluminum Elements — Watts/Meter

Copper/Aluminum Elements with Fully Perforated Enclosures						Steam Rating 102°C	Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
19 mm	108 x 92	131	S12-SF	1	406	1260	1250	1130	1030	930	830	730	630	540	480	390
			S18-SF	1	559	1490	1300	1180	1070	970	860	760	650	560	500	410
			S18-SF	2-152 mm	559	2180	2250	2040	1850	1670	1480	1310	1130	960	860	710
			F12-SF	1	406	1150	1150	1040	940	860	760	670	580	490	440	370
			F18-SF	1	559	1350	1180	1070	970	870	780	680	600	510	450	380
			F18-SF	2-152 mm	559	2000	2060	1860	1680	1530	1360	1190	1040	880	790	640
19 mm	108 x 92	164	S12-SF	1	406	1370	1360	1230	1120	1010	890	790	690	590	520	430
			S18-SF	1	559	*1720	1410	1280	1150	1050	930	820	710	610	540	440
			S18-SF	2-152 mm	559	2310	2410	2180	1980	1790	1590	1400	1220	1040	920	760
			F12-SF	1	406	1300	1280	1160	1050	950	850	740	640	550	490	400
			F18-SF	1	559	1550	1300	1180	1070	970	860	760	650	560	500	410
			F18-SF	2-152 mm	559	2200	2300	2090	1880	1710	1510	1340	1160	990	870	720
25 mm	108 x 108	131	S12-SF	1	406	1430	1440	1310	1180	1080	950	840	730	620	550	450
			S18-SF	1	559	1660	1490	1360	1220	1110	980	870	750	640	570	470
			S18-SF	2-152 mm	559	2300	2590	2340	2110	1920	1700	1500	1310	1110	980	810
			F12-SF	1	406	1310	1330	1190	1090	980	870	770	660	570	500	410
			F18-SF	1	559	1490	1350	1210	1100	1000	880	780	670	580	510	420
			F18-SF	2-152 mm	559	2200	2470	2240	2030	1840	1620	1430	1250	1060	940	780
25 mm	108 x 108	164	S12-SF	1	406	1510	1480	1350	1210	1110	970	870	750	630	570	470
			S18-SF	1	559	1900	1550	1390	1270	1140	1020	890	780	660	590	480
			S18-SF	2-152 mm	559	2170	2610	2360	2140	1940	1720	1520	1320	1120	1000	820
			F12-SF	1	406	1410	1390	1260	1140	1040	910	810	700	600	530	440
			F18-SF	1	559	1700	1430	1300	1170	1070	940	840	720	620	550	450
			F18-SF	2-152 mm	559	2070	2480	2250	2040	1850	1630	1440	1250	1070	940	780
32 mm	108 x 108	131	S12-SF	1	406	1410	1410	1280	1150	1050	930	820	710	610	540	440
			S18-SF	1	559	1630	1470	1340	1210	1100	970	860	740	630	560	460
			S18-SF	2-152 mm	559	*2260	2550	2300	2090	1890	1670	1480	1290	1090	970	800
			F12-SF	1	406	1290	1290	1170	1060	960	850	750	650	560	490	400
			F18-SF	1	559	1470	1330	1190	1090	980	870	770	660	570	500	410
			F18-SF	2-152 mm	559	2160	2430	2200	1990	1810	1600	1410	1230	1040	920	770
32 mm	108 x 108	164	S12-SF	1	406	*1480	1450	1320	1190	1080	950	850	730	620	560	460
			S18-SF	1	559	*1860	1520	1370	1240	1120	1000	880	770	650	580	480
			S18-SF	2-152 mm	559	2130	2580	2330	2110	1910	1690	1500	1300	1110	980	810
			F12-SF	1	406	1390	1370	1240	1120	1020	900	800	690	590	520	430
			F18-SF	1	559	1670	1410	1280	1150	1050	930	820	710	610	540	440
			F18-SF	2-152 mm	559	2030	2440	2210	2000	1820	1610	1420	1230	1050	930	770

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 457 mm high enclosures installed on 152 mm center lines.

Table PD-7 — Steel Tube/Fin Elements — Btu/Hour/Foot

Steel Tube/Fin Elements with Fully Perforated Enclosures						Steam Rating 215°F	Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Encl. Type	Tiers & Centers	Mtg. Height Inches	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
1¼″	4¼″ x 4¼″	40	S12-SF	1	16	1250	1310	1190	1080	980	860	760	660	560	500	410
			S18-SF	1	22	1300	1370	1240	1120	1010	900	790	690	590	520	430
			S18-SF	2-6″	22	2250	2360	2140	1940	1760	1550	1370	1190	1010	900	740
			F12-SF	1	16	1120	1180	1060	960	870	770	680	590	500	450	370
			F18-SF	1	22	1160	1220	1100	1000	900	800	710	610	520	460	380
			F18-SF	2-6″	22	2080	2180	1980	1790	1620	1440	1270	1100	940	830	690
1¼″	4¼″ x 4¼″	32	S12-SF	1	16	1070	1170	1060	960	870	770	680	590	500	450	370
			S18-SF	1	22	1110	1190	1080	970	880	780	690	600	510	450	370
			S18-SF	2-6″	22	1930	2170	1970	1780	1620	1430	1260	1090	930	830	680
			F12-SF	1	16	960	1050	950	860	780	690	610	530	450	400	330
			F18-SF	1	22	1000	1060	960	870	780	690	620	530	450	400	340
			F18-SF	2-6″	22	1790	2010	1820	1650	1490	1320	1170	1010	860	760	630

1. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
2. Two-tier applications can only be used with 18″ high enclosures installed on 6″ center lines.

Table PD-8 — Steel Tube/Fin Elements — Watts/Meter

Steel Tube/Fin Elements with Fully Perforated Enclosures							Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size mm	Fins/ Meter	Encl. Type	Tiers & Centers	Mtg. Height mm	Steam Rating 102°C	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
32 mm	108 x 108	131	S12-SF	1	406	1230	1260	1140	1040	940	830	730	630	540	480	390
			S18-SF	1	559	1330	1320	1190	1080	970	870	760	660	570	500	410
			S18-SF	2-152 mm	559	2060	2270	2060	1860	1690	1490	1320	1140	970	870	710
			F12-SF	1	406	1110	1130	1020	920	840	740	650	570	480	430	360
			F18-SF	1	559	1180	1170	1060	960	870	770	680	590	500	440	370
			F18-SF	2-152 mm	559	1900	2100	1900	1720	1560	1380	1220	1060	900	800	660
32 mm	108 x 108	105	S12-SF	1	406	1060	1080	980	890	810	710	630	540	460	410	340
			S18-SF	1	559	1130	1140	1020	930	830	750	650	570	490	430	350
			S18-SF	2-152 mm	559	1770	1950	1770	1600	1450	1280	1140	980	830	750	610
			F12-SF	1	406	950	970	880	790	720	640	560	490	410	370	310
			F18-SF	1	559	1020	1010	910	830	750	660	580	510	430	380	320
			F18-SF	2-152 mm	559	1630	1810	1630	1480	1340	1190	1050	910	770	690	570

1. *I = B = R Rating on Assemblies as marked.
2. Mounting Height is the dimension from the floor to the top of the enclosure to obtain listed capacities.
3. Two-tier applications can only be used with 457 mm high enclosures installed on 152 mm center lines.

Performance Data

Table PD-9 — Ratings of Security Wall Fin Copper/Aluminum Elements Without Enclosures

Element Size	Model	Fin Size Inches (mm)	Fin Series Per Foot Per Meter	Fin Thickness Inches (mm)	Steam Capacity Per Ft. — 1 Psi at 65°F Air **Per Meter — 6.895 kPa at 18.3°C Air** Tiers	Install. Height Inches (mm)	Btu/Hr./Ft (Watts/Meter)	Hot Water Capacity Btu/Hr/Ft — At 65°F Air, Average Water Temperature **Watts/Meters — At 18.3°C Air, Average Water Temperature** **200°F 93°C**	**190°F 88°C**	**180°F 82°C**	**170°F 77°C**	**160°F 71°C**	**150°F 66°C**
								IBR Factor — Steam to Hot Water					
								0.86	0.78	0.69	0.61	0.53	0.45
3/4"	3CA4340	4 1/4" x 3 5/8"	40	.020"	1	9 3/8	1470	1260	1150	1010	900	780	660
(19)		(108 x 92)	(131 m)	(.51)		(238.00)	(1410)	(1210)	(1110)	(971)	(865)	(750)	(635)
					2-6 CL	15 3/8	2580	2200	2010	1780	1570	1370	1160
					(152)	(391.00)	(2480)	(2120)	(1930)	(1710)	(1510)	(1320)	(1120)
					3-6 CLS	21 3/8	3500	3010	2730	2420	2140	1860	1580
					(152)	(543.00)	(3370)	(2890)	(2620)	(2330)	(2060)	(1790)	(1520)
3/4"	3CA4350	4 1/4" x 3 5/8"	50	.020"	1	9 3/8	1600	1380	1250	1100	980	850	720
(19)		(108 x 92)	(164 m)	(.51)		(238.00)	(1540)	(1330)	(1200)	(1060)	(942)	(817)	(692)
					2-6 CL	15 3/8	2680	2300	2090	1850	1630	1420	1210
					(152)	(391.00)	(2580)	(2210)	(2010)	(1780)	(1570)	(1360)	(1160)
					3-6 CL	21 3/8	3600	3100	2810	2480	2200	1910	1620
					(152)	(543.00)	(3460)	(2980)	(2700)	(2380)	(2120)	(1840)	(1560)
1"	1CA4440	4 1/4" x 4 1/4"	40	.020"	1	9 3/8	1690	1450	1320	1170	1030	900	760
(25)		(108 x 108)	(131 m)	(.51 m)		(238.00)	(1620)	(1390)	(1270)	(1120)	(990)	(865)	(731)
					2-6 CL	15 3/8	2730	2350	2130	1880	1670	1450	1230
					(152)	(391.00)	(2620)	(2260)	(2050)	(1810)	(1610)	(1390)	(1180)
					3-6 CL	21 3/8	3560	3060	2780	2460	2170	1890	1600
					(152)	(543.00)	(3420)	(2940)	(2670)	(2370)	(2090)	(1820)	(1540)
1"	1CA4450	4 1/4" x 4 1/4"	50	.020"	1	9 3/8	1740	1500	1360	1200	1060	920	780
(25)		(108 x 108)	(164 m)	(.51		(238.00)	(1670)	(1440)	(1310)	(1150)	(1020)	(885)	(750)
					2-6 CL	15 3/8	2510	2160	1960	1730	1530	1330	1310
					(152)	(391.00)	(2410)	(2080)	(1880)	(1660)	(1470)	(1280)	(1260)
					3-6 CL	21 3/8	3260	2800	2540	2250	1990	1730	1470
					(152)	(543.00)	(3140)	(2690)	(2440)	(2160)	(1910)	(1660)	(1410)
1 1/4"	4CA4440	4 1/4" x 4 1/4"	40	.020"	*1	9 3/8	1660	1430	1290	1150	1010	880	750
(32)		(108 x 108)	(131 m)	(.51)		(238.00)	(1600)	(1380)	(1240)	(1110)	(971)	(846)	(721)
					*2-6 CL	15 3/8	2680	2300	2090	1850	1630	1420	1200
					(152)	(391.00)	(2580)	(2210)	(2010)	(1780)	(1570)	(1360)	(1150)
					*3-6 CL	21 3/8	3490	300	2720	2410	2130	1850	1570
					(152)	(543.00)	(3360)	(288)	(2620)	(2320)	(2050)	(1780)	(1510)
1 1/4"	4CA4450	4 1/4" x 4 1/4"	50	.020"	*1	9 3/8	1710	1470	1330	1180	1040	910	770
(32)		(108 x 108)	(164 m)	(.51)		(238.00)	(1640)	(1410)	(1280)	(1140)	(1000)	(875)	(740)
					*2-6 CL	15 3/8	2460	2120	1920	1700	1500	1300	1110
					(152)	(391.00)	(2370)	(2040)	(1850)	(1640)	(1440)	(1250)	(1070)
					*3-6 CL	21 3/8	3200	2750	2500	2210	1950	1700	1440
					(152)	(543.00)	(3080)	(2640)	(2400)	(2120)	(1880)	(1640)	(1380)

Performance Data

Table PD-10 — Ratings of Security Wall Fin Steel Elements Without Enclosures

Element Size	Model	Fin Size Inches (mm)	Fin Series Per Foot Per Meter	Fin Thickness Inches (mm)	Steam Capacity Per Ft. — 1 Psi at 65°F Air **P6.895 kPa at 18.3°C Air** Tiers	Install. Height Inches (mm)	Btu/Hr./Ft (Watts/Meter)	Hot Water Capacity Btu/Hr/Ft — At 65°F Air, Average Water Temperature **Watts/Meters — At 18.3°C Air, Average Water Temperature** **200°F 93°C**	**190°F 88°C**	**180°F 82°C**	**170°F 77°C**	**160°F 71°C**	**150°F 66°C**
								IBR Factor — Steam to Hot Water					
								0.86	0.78	0.69	0.61	0.53	0.45
1 1/4″	4ST4440	4 1/4″ x 4 1/4″	32	.032″	1	9 3/8	1310	1130	1020	900	800	690	590
(32)		(108 x 108)	(105 m)	(.81)		(238.00)	(1260)	(1060)	(981)	(865)	(769)	(664)	(567)
					2-6 CL	15 3/8	2300	1980	1790	1590	1400	1220	1040
					(152)	(391.00)	(2210)	(1900)	(1720)	(1530)	(1350)	(1170)	(1000)
					3-6 CLS	21 3/8	3030	2610	2360	2090	1850	1610	1360
					(152)	(543.00)	(2910)	(2510)	(2270)	(2010)	(1780)	(1550)	(1310)
1 1/4″	4ST4432	4 1/4″ x 4 1/4″	40	.032″	1	9 3/8	1480	1270	1150	1020	900	750	670
(32)		(108 x 108)	(131 m)	(.81)		(238.00)	(1420)	(1220)	(1110)	(981)	(865)	(721)	(644)
					2-6 CL	15 3/8	2440	2100	1900	1680	1490	1290	1100
					(152)	(391.00)	(2350)	(2020)	(1830)	(1620)	(1430)	(1240)	(1060)
					3-6 CL	21 3/8	3170	2730	2470	2190	1930	1680	1430
					(152)	(543.00)	(3050)	(2620)	(2380)	(2110)	(1860)	(1620)	(1380)
2″	2ST4425	4 1/4″ x 4 1/4″	25	.032″	1	9 3/8	1140	980	890	790	700	600	510
(51)		(108 x 108)	(82 m)	(.81)		(238.00)	(1100)	(942)	(856)	(760)	(673)	(577)	(490)
					2-6 CL	15 3/8	2030	1750	1580	1400	1240	1080	910
					(152)	(391.00)	(1950)	(1680)	(1520)	(1350)	(1190)	(1040)	(875)
					3-6 CL	21 3/8	2700	2320	2110	1860	1650	1430	1220
					(152)	(543.00)	(2600)	(2230)	(2030)	(1790)	(1590)	(1380)	(1170)
2″	2ST4432	4 1/4″ x 4 1/4″	32	.032″	1	9 3/8	1320	1140	1030	910	810	700	590
(51)		(108 x 108)	(105 m)	(.81)		(238.00)	(1270)	(1100)	(990)	(875)	(779)	(673)	(567)
					2-6 CL	15 3/8	2230	1920	1740	1540	1360	1180	1000
					(152)	(391.00)	(2140)	(1850)	(1670)	(1480)	(1310)	(1140)	(962)
					3-6 CL	21 3/8	2910	2500	2270	2010	1790	1540	1310
					(152)	(543.00)	(2800)	(2400)	(2180)	(1930)	(1720)	(1480)	(1260)

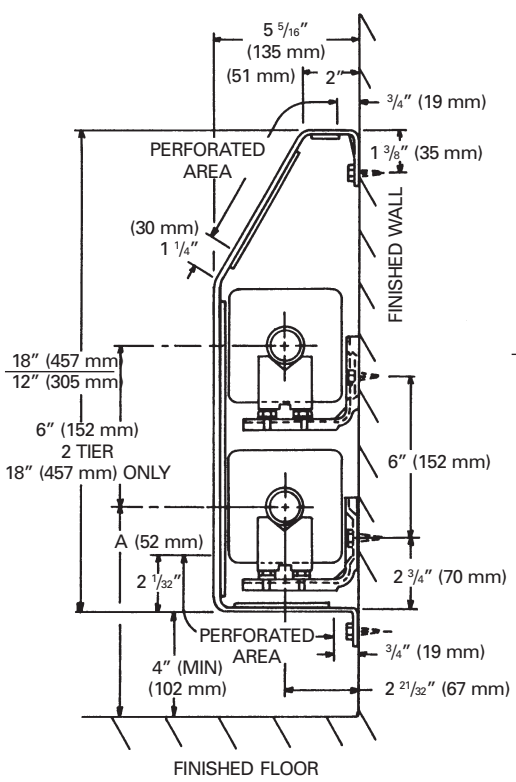
Notes:
1. Dimensions in ( ) are shown in millimeters.
2. Dimensions in bold indicate metric units.

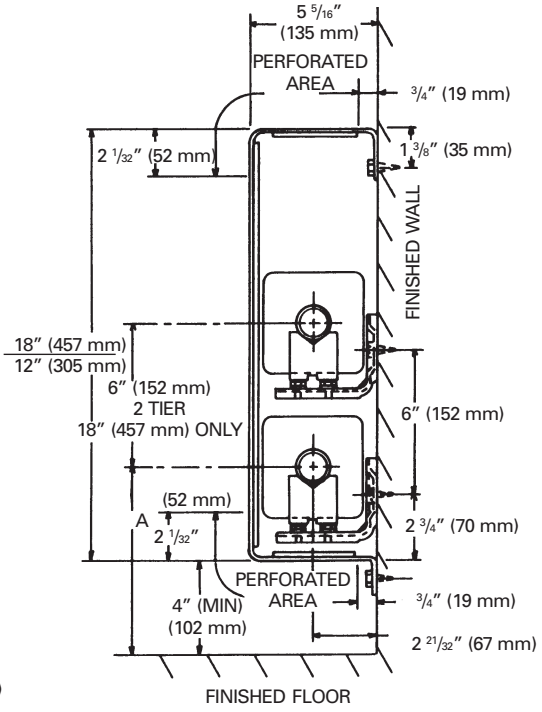
Dimensional Data

Security Wall Fin

Partially Perforated

Finned Tube Radiation Model S & F — Security Enclosures Partially Perforated





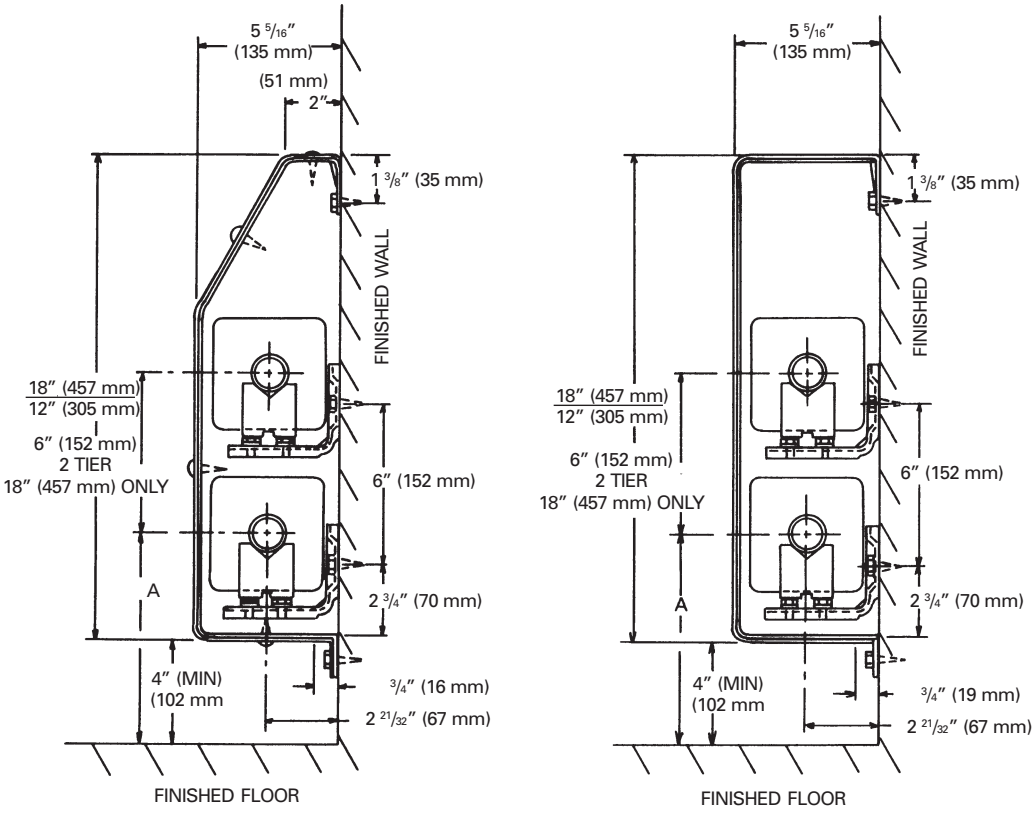
Notes:
1. For two tiers, 18" high enclosure must be used.

Dimensional Data

Security Wall Fin

Fully Perforated

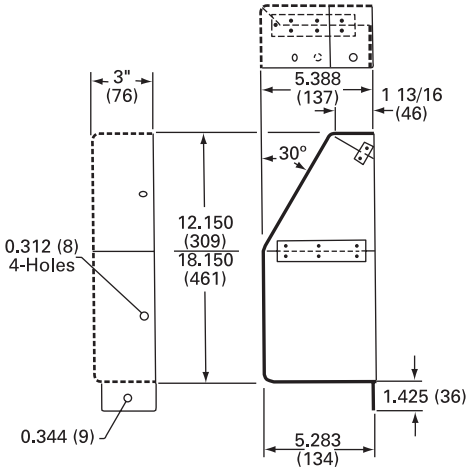
Finned Tube Radiation Model S & F — Security Enclosures Fully Perforated



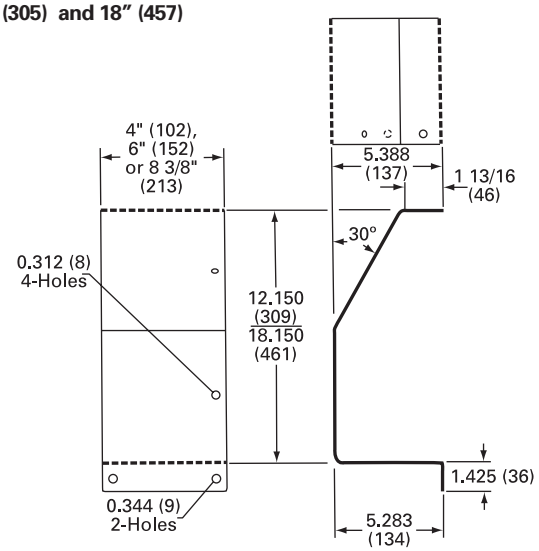
Notes:
1. For two tiers, 18" high enclosure must be used.

Dimensional Data

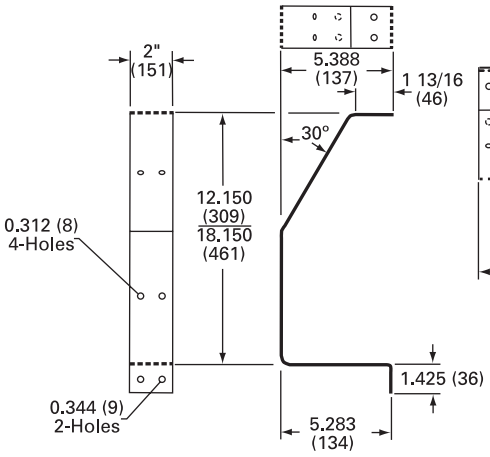
Slope Top — 12″ (305) and 18″ (457)



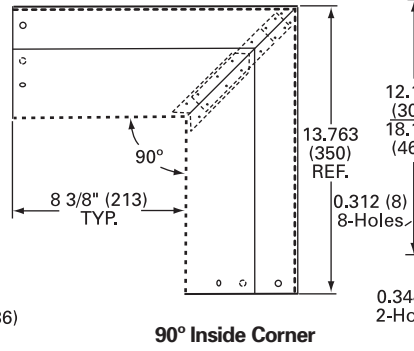
3″ (76) End Cap



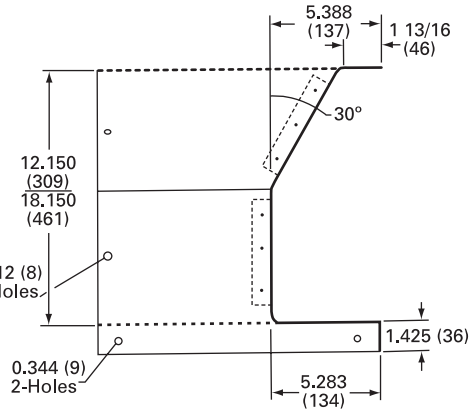
4″ (102), 6″ (152), 8 3/8″ (213) End Trim

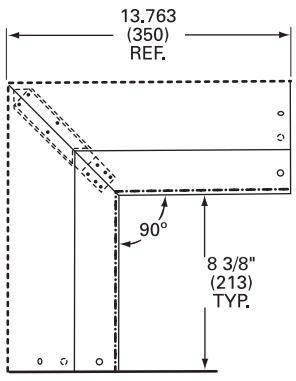


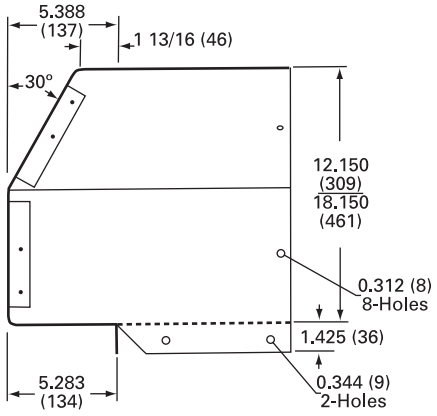
2″ Joiner Piece



90° Inside Corner





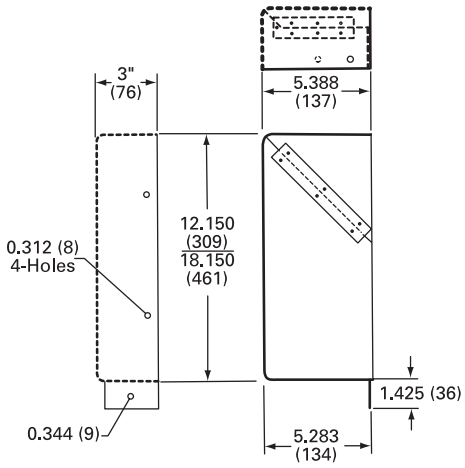


90° Outside Corner

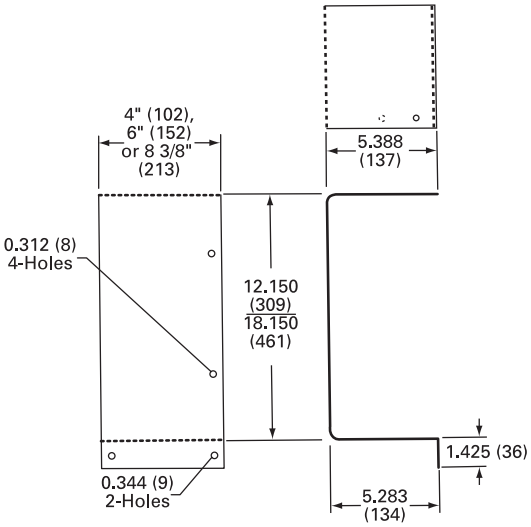
Dimensions shown in ( ) are in millimeters.

Dimensional Data

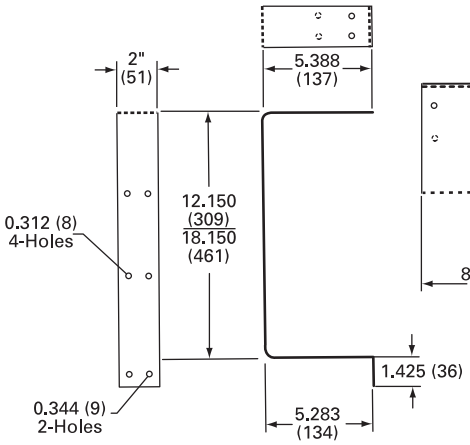
Flat Top — 12″ (305) and 18″ (457)

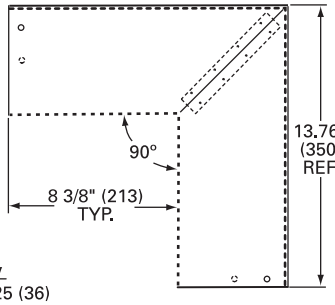


3″ (76) End Cap

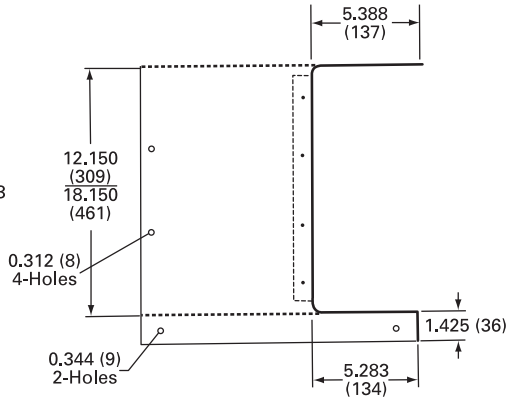


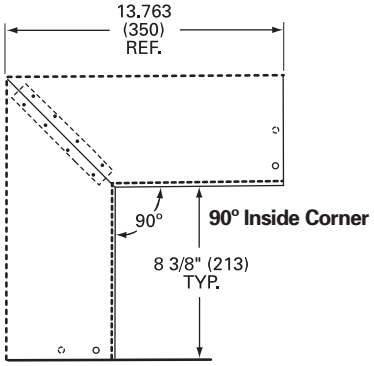
4″ (102), 6″ (152), 8 3/8″ (213) End Trim



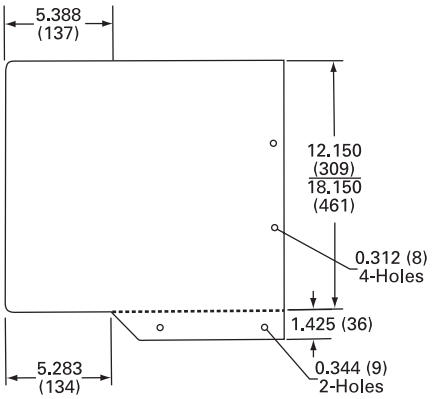


90° Outside Corner



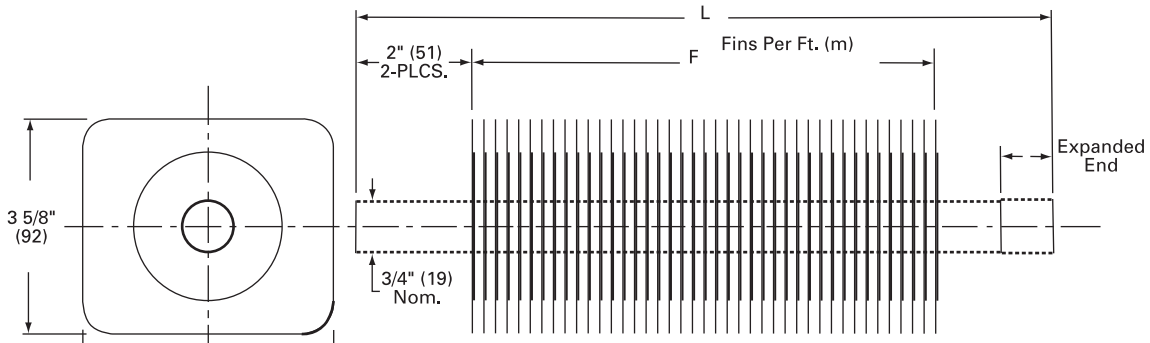


90° Inside Corner



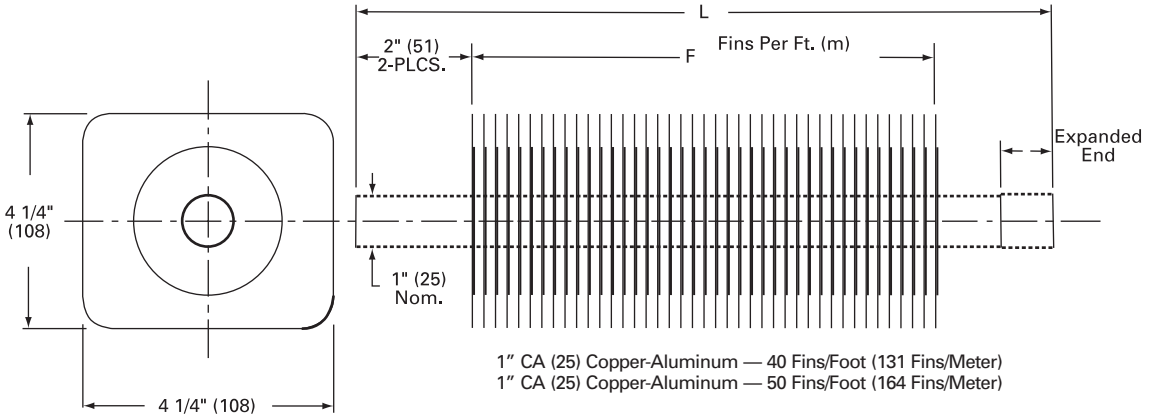
Dimensions shown in ( ) are in millimeters.

Dimensional Data

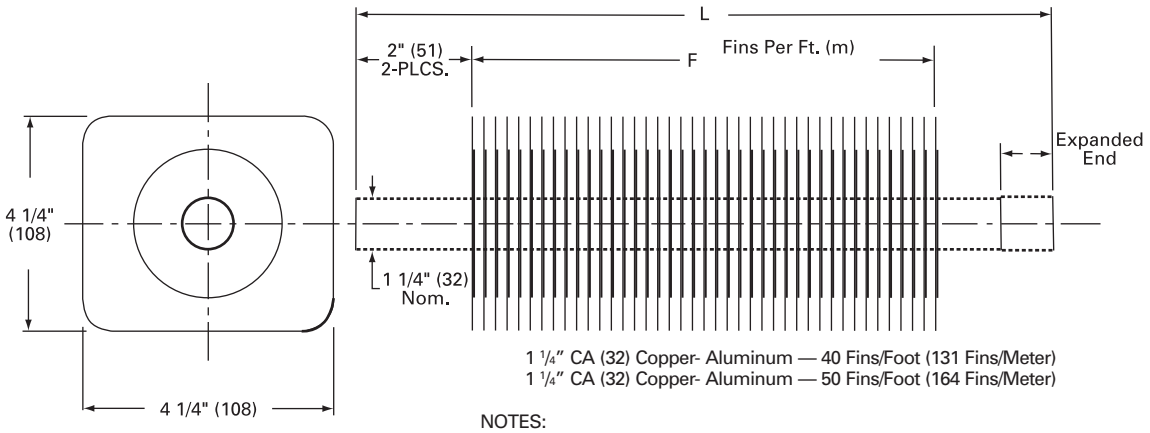


¾″ CA (19) Copper- Aluminum — 40 Fins/Foot (131 Fins/Meter)
¾″ CA (19) Copper- Aluminum — 50 Fins/Foot (164 Fins/Meter)

NOTES:
1. Fins mechanically bonded to tube
2. Fin thickness is .020″ (0.51)
3. Element lengths from 1′0″ (0.30 m) through 8′0″ (2.4 m)



1″ CA (25) Copper-Aluminum — 40 Fins/Foot (131 Fins/Meter)
1″ CA (25) Copper-Aluminum — 50 Fins/Foot (164 Fins/Meter)

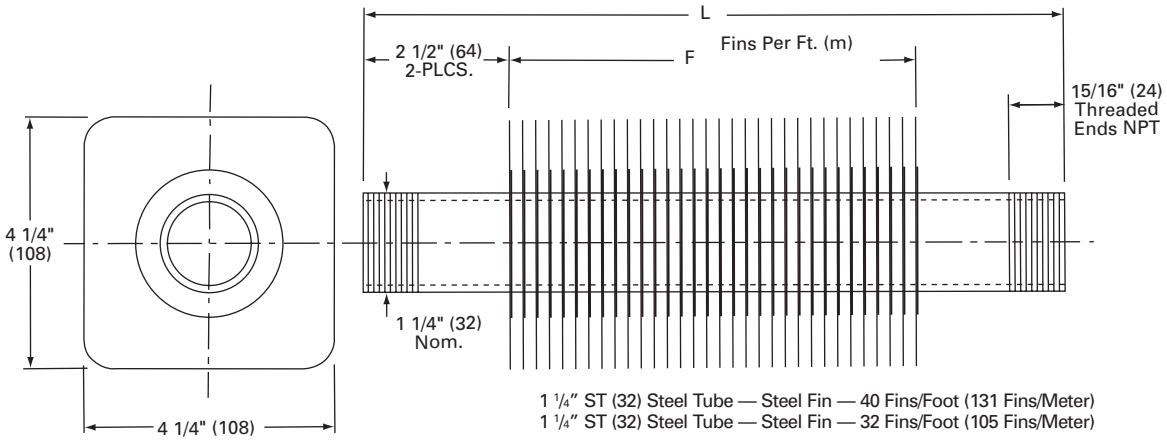


1 ¼″ CA (32) Copper- Aluminum — 40 Fins/Foot (131 Fins/Meter)
1 ¼″ CA (32) Copper- Aluminum — 50 Fins/Foot (164 Fins/Meter)

NOTES:
1. Fins mechanically bonded to tube
2. Fin thickness is .020″ (0.51)
3. Element lengths from 1′0″ (0.30 m) through 12′ (3.66 m)

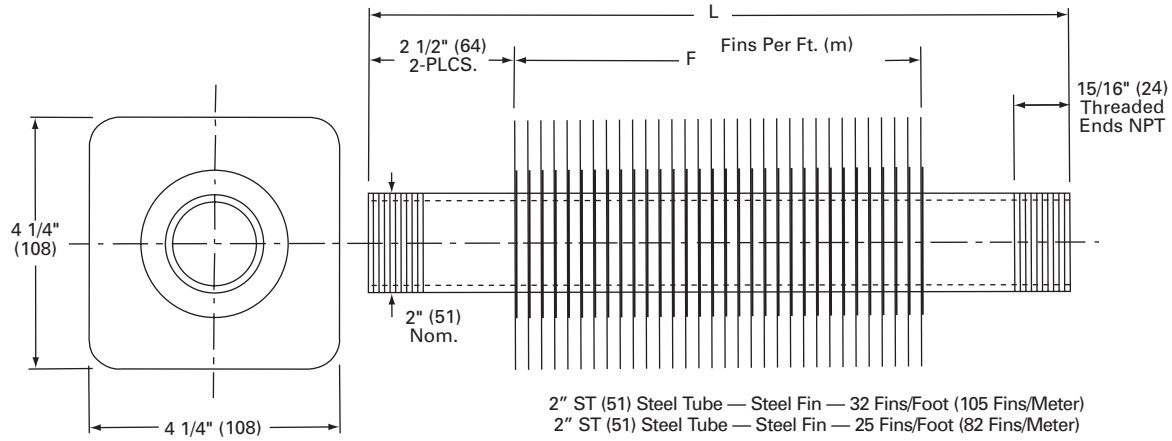
Dimensions shown in ( ) are in millimeters.

Dimensional Data



1 ¼″ ST (32) Steel Tube — Steel Fin — 40 Fins/Foot (131 Fins/Meter)
1 ¼″ ST (32) Steel Tube — Steel Fin — 32 Fins/Foot (105 Fins/Meter)

NOTES:
1. Fins mechanically bonded to tube
2. Fin thickness is .032″ (0.81)
3. Element lengths from 1′0″ (0.30 m) through 12′ (3.66 m)



2″ ST (51) Steel Tube — Steel Fin — 32 Fins/Foot (105 Fins/Meter)
2″ ST (51) Steel Tube — Steel Fin — 25 Fins/Foot (82 Fins/Meter)

NOTES:
1. Fins mechanically bonded to tube
2. Fin thickness is .032″ (0.81)
3. Element lengths from 1′0″ (0.30 m) through 12′ (3.66 m)

Mechanical Specifications

Security Enclosures

Models S and F

Specifications
Natural convection security wall fin shall be furnished to meet the specified capacity. Enclosure, heating elements and accessories shall be installed in accordance with the manufacturer's recommendations. All enclosures shall be tamper-resistant.

Mounting
Hydronic security slope top and flat top wall fin enclosures shall be wall-mounted 3 1/2" (89 mm) to 4" (102 mm) above the floor level to obtain catalog capacities.

Enclosures
Type S — Slope top outlet and Type F — flat top outlet: Each enclosure top/front/bottom panel shall be of one piece (full wrap-around design) for complete engagement with the wall to prevent access to the inside of the unit.

Enclosures shall be fabricated from 14-gauge (1.9 mm thickness) steel for strength and durability. Optional 12-gauge (2.6 mm thickness) steel shall be available. All enclosure panels shall be manufactured with 1/8" (3 mm) diameter holes on 3/16" (5 mm) staggered centers for a partial perforated (inlet and outlet) panel with internal interlocking slip joints. Optional fully perforated enclosures of the entire panel shall be available with intermediate overlapping wall sleeve with pre-punched fastener holes for panel-to-panel alignment and fastening.

Cabinet depth shall be 5 5/16" (135 mm) for 12" (305 mm) high enclosures for single tier element and 18" (457 mm) enclosures for single or double tier element applications. Enclosures shall be available in 2-feet (.61 m) through 8- feet (2.4 m) in 6" (.15 m) increments.

- Partially Perforated — 14-Gauge (Standard)
- Partially Perforated — 12-Gauge (Optional)
- Fully Perforated — 14-Gauge (Optional)
- Fully Perforated — 12-Gauge (Optional)

Enclosure Suspension System
Enclosures with (visible tamper- resistant fasteners by others) for heating elements shall be installed to a continuous partial back plate/mounting strip manufactured from 14-gauge (1.9 mm thickness) steel at the top with the bottom of the front panel fastened to the wall. Optional continuous full back plate/mounting strip manufactured from 14-gauge (1.9 mm thickness) steel shall be available. Elements or return and supply piping shall be secured to the wall with wall type element brackets manufactured of 14-gauge (1.9 mm thickness) Galvanneal steel with channel formed edges for rigidity. Each wall bracket shall be furnished with galvanized element cradles, nylon inserts with snap in rust resistant nickel-chromium plated ball bearings for silent glide operation of the heating element.

- Partial back plate/mounting strip (Standard)
- Full back plate/mounting strip (Optional)

Accessories
— End caps left and right hand configurations,
— End Trims 6" (152 mm) wide shall have wrap around design less fastener holes,
— 90 degree inside corners and
— 90 degree outside corners
— All accessories shall be manufactured from 14-gauge (1.9 thickness) steel to provide a maximum security installation.

Color Finish
All enclosures, back plate/mounting strip and accessories shall be painted with a baked-on commercial primer paint as standard. Optional baked-on enamel color finishes shall be available.

Color Options
Baked-on enamel color finish shall be chosen from Color Selection Chart UNT-S-10.

Heating Elements

- 3/4" CA (19 mm)
  (Copper Tube-Aluminum Fin)
  The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to- end joining. 4 1/4" x 3 5/8" (108 mm x 92 mm) size fins x .020" (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).

Mechanical Specifications

Security Enclosures

- 1″ CA (25 mm)
  (Copper Tube-Aluminum Fin)
  The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to- end joining. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .020″ (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 1/4″ CA (32 mm)
  (Copper Tube-Aluminum Fin)
  The heating elements shall be constructed of seamless copper tubing mechanically expanded into aluminum fins. One tube end swaged for end-to- end joining. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .020″ (.51 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 50 fins per foot (164 fins per m).
- 1 1/4″ Steel (32 mm)
  (Steel Tube-Steel Fins)
  The heating elements shall be constructed of condenser tubing mechanically expanded into steel fins. Tube ends shall be threaded and furnished with NPT threads. 4 1/4″ x 4 1/4″ (108 mm x 108 mm) size fins x .032″ (.81 mm) fin thickness for maximum heat transfer.
  — Fin spacing of 40 fins per foot (131 fins per m).
  — Fin spacing of 32 fins per foot (105 fins per m).

Element Lengths

3/4″ CA (19 mm) elements shall be provided in 1′ (.3048 m) thru 8′ (2.44 m) lengths in 6″ (.1542 m) increments.

1″ CA (25 mm) & 1 1/4″ CA (32 mm) elements shall be provided in 1′ (.3048 m) thru 12′ (3.66 m) lengths in 6″ (.1524 m) increments.

1 1/4″ steel (32 mm) elements shall be provided in 1′ (.3048 m) thru 12′ (3.66 m) lengths in 6″ (.1524 m) increments.

Features and Benefits

Model 11S

Light Commercial Slope Top Wall Fin Enclosure

The Trane hydronic light commercial slope top 11S wall fin line has been designed for natural convection to fill a void between less costly *residential and commercial baseboard* and the bigger and more expensive *commercial wall fin* enclosures and elements.

11S is a *clean, reliable* hydronic heat perimeter heating system that can be used as an economical primary or secondary heat source. It also serves as an effective draft barrier near cold walls and windows.

Because of its ease of installation, rugged construction and styling, 11S wall fin is *especially suited for use in commercial, industrial and institutional applications*. Typical examples include offices, schools, hospitals, dormitories, nursing homes, churches, transportation terminals and housing projects.

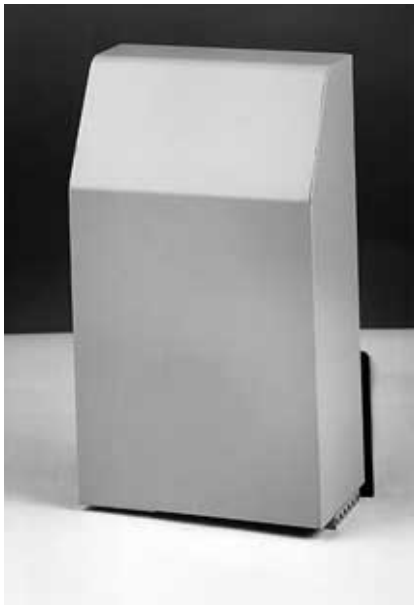
A wide variety of *heating elements* is available, along with a complete line of *accessories* for wall-to-wall installation that is architecturally compatible with any interior design. Other features and benefits include:

- *Simple installation* with a rugged mounting strip allows bracket placement.
- *Rigid front panels* constructed of 18-gauge or 16-gauge steel.
- *Quiet operation.*
- *Clean, even heat* — only the air within the room is recirculated — walls and furnishings stay cleaner.
- *Pencil-proof louvered air opening* — helps prevent trash from accumulating on the heating element.
- *Durable finish* — all enclosures and accessories are cleaned and chemically phosphatized before painting.
- *Labor-saving rod hangers* — suspended from the top of the enclosure bracket, they allow full expansion of the element. There are no bolts to fasten.
- *No visible fasteners.*

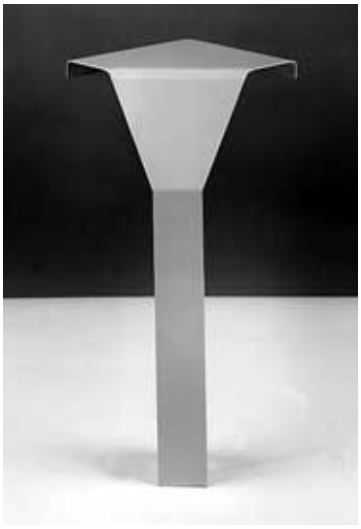
Features and Benefits

Model 11S

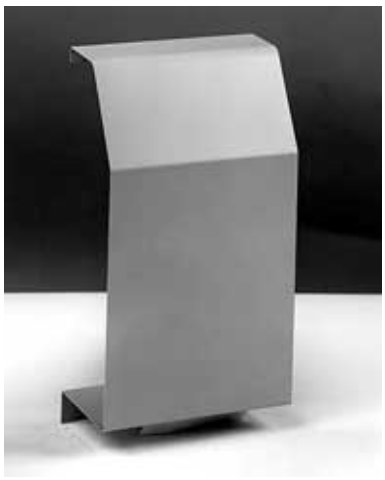
6" (152 mm) End Cap With Access Door



6" (152 mm) End Cap



Inside Corner

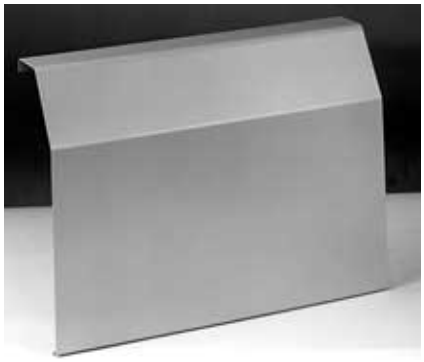


6" (152 mm) Wall Trim

8" (203 mm) Valve Compartment

Features and Benefits

Model 11S



14″ (356 mm) Fill-In Section

Outside Corner

2″ (51 mm) Splice Plate

Performance and General Data

Model 11S English Units

Table PD-1 — Copper/Aluminum Elements — Btu/Hour/Foot

Copper/Aluminum Elements				11S Encl.	Steam Rating 215°F	Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Fin Thickness	Mtg.(2) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
(3) 3/4"	2 1/4 x 2 1/2	50	0.011"	14 1/4"	1080	1130	1020	930	840	750	660	570	490	530	360
(3) 3/4"	2 3/4 x 2 1/2	55	0.011"	14 1/4"	1140	1195	1080	980	890	785	695	605	515	455	375
*3/4"	2 3/4 x 3 3/4	50	0.011"	14 1/4"	1170	1225	1110	1010	915	810	715	620	530	465	385
(3) 1"	2 3/4 x 2 1/2	55	0.011"	14 1/4"	1090	1145	1035	935	850	755	665	575	490	435	360
1"	2 3/4 x 3 3/4	50	0.011"	14 1/4"	1130	1185	1075	970	880	780	690	600	510	450	370
1"	2 3/4 x 5	40	0.020"	14 1/4"	1200	1260	1140	1030	935	830	730	630	540	480	395
*1"	2 3/4 x 5	50	0.020"	14 1/4"	1210	1270	1150	1040	945	835	740	645	545	485	400
1 1/4"	2 3/4 x 3 3/4	50	0.020"	14 1/4"	1150	1210	1095	990	895	795	700	610	515	460	380
*1 1/4"	2 3/4 x 5	40	0.020"	14 1/4"	1150	1210	1095	990	895	795	700	610	515	460	380
1 1/4"	2 3/4 x 5	50	0.020"	14 1/4"	1230	1290	1170	1060	960	850	750	655	555	490	405

1. * I=B=R Rating on assemblies as marked.
2. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.
3. Two-tier applications can only be used with the 3/4" and 1"' CA elements with 2 3/4" x 2 1/2" size fins.

Table PD-2 — Steel Tube/Fin Elements — Btu/Hour/Foot

Steel Tube/Fin Elements				11S Encl.	Steam Rating 215°F	Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Fin Thickness	Mtg.(2) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
*1"	2 3/4 x 3 3/4	40	0.024"	14 1/4"	910	955	865	785	710	630	555	485	410	365	300
1"	2 3/4 x 5	40	0.024"	14 1/4"	910	955	865	785	710	630	555	485	410	365	300
1 1/4"	2 3/4 x 5	40	0.024"	14 1/4"	930	975	885	800	725	625	570	495	420	370	305

1. * I=B=R Rating on assemblies as marked.
2. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.

Table PD-3 — Copper/Aluminum Elements — Btu/Hour/Foot— Two Tiers

Copper/Aluminum Elements				11S Encl.	Steam Rating 215°F	Hot Water (Ave.) 220°F	210°F	200°F	190°F	180°F	170°F	160°F	150°F	140°F	130°F
Tube Size	Fin Size Inches	Fins/ Foot	Fin Thickness	Mtg.(1) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
3/4"	2 3/4 x 2 1/2	55	0.011"	14 1/4"	1560	1640	1480	1340	1220	1080	950	830	700	620	510
1"	2 3/4 x 2 1/2	55	0.011"	14 1/4"	1600	1680	1520	1380	1250	1100	980	850	720	640	530

1. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.
2. Capacities based on two tiers of element mounted on 3 1/2" (89 mm) centers.

Performance and General Data

Model 11S SI Units

Table PD-4 — Copper/Aluminum Elements — Watts/Meter

Copper/Aluminum Elements				11S Encl.	Steam Rating 102°C	Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Millimeters	Fins/ Meter	Fin Thickness	Mtg.(2) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
[3] 19 mm	57 x 64	164	0.28 mm	362 mm	1040	1090	990	890	810	720	630	550	470	415	340
[3] 19 mm	70 x 64	180	0.28 mm	362 mm	1095	1150	1035	940	855	755	665	580	495	435	360
*19 mm	70 x 95	164	0.28 mm	362 mm	1125	1175	1065	970	880	775	685	595	510	445	370
[3] 25 mm	70 x 64	180	0.28 mm	362 mm	1050	1100	995	900	815	725	640	550	470	415	345
25 mm	70 x 95	164	0.28 mm	362 mm	1085	1140	1035	930	845	750	665	575	490	430	355
25 mm	70 x 127	131	0.51 mm	362 mm	1155	1210	1045	990	900	800	700	605	520	460	380
*25 mm	70 x 127	164	0.51 mm	362 mm	1165	1220	1105	1000	910	800	710	620	525	465	385
32 mm	70 x 95	164	0.51 mm	362 mm	1105	1165	1050	950	860	765	670	585	495	440	365
*32 mm	70 x 127	131	0.51 mm	362 mm	1105	1165	1050	950	860	765	670	585	495	440	365
32 mm	70 x 127	164	0.51 mm	362 mm	1180	1240	1125	1020	920	815	720	630	535	470	390

1. * I=B=R Rating on assemblies as marked.
2. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.
3. Two-tier applications can only be used with the 19 mm and 25 mm CA elements with 70 x 64 mm size fins.

Table PD-5 — Steel Tube/Fin Elements — Watts/Meter

teel Tube/Fin Elements				11S Encl.	Steam Rating 102°C	Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Millimeters	Fins/ Meter	Fin Thickness	Mtg.(2) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
*25 mm	70 x 95	131	0.61 mm	362 mm	875	920	830	755	680	605	535	465	395	350	290
25 mm	70 x 127	131	0.61 mm	362 mm	875	920	830	755	680	605	535	465	395	350	290
32 mm	70 x 127	131	0.61 mm	362 mm	895	935	850	770	695	600	545	475	405	355	295

1. * I=B=R Rating on assemblies as marked.
2. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.

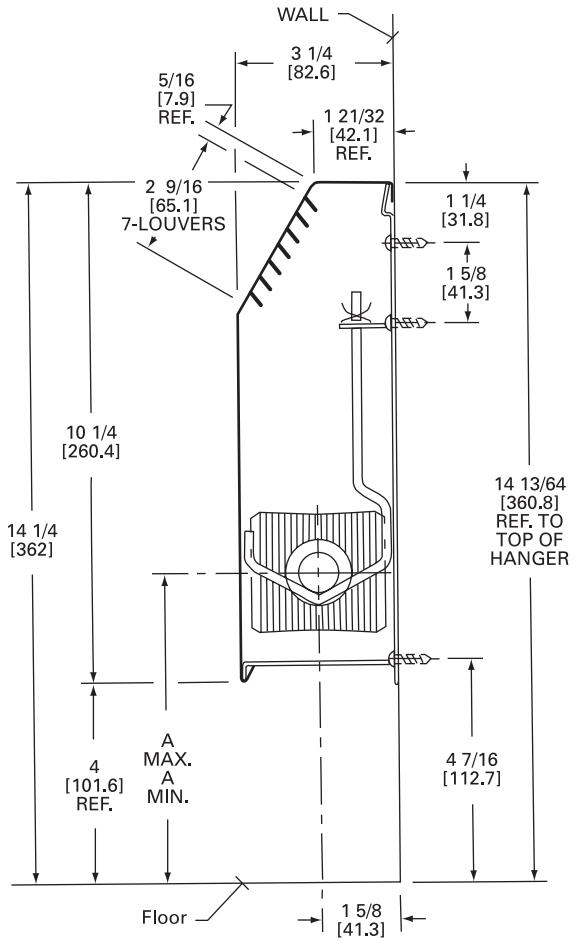
Table PD-6— Copper/Aluminum Elements — Watts/Meter — Two Tiers

Copper/Aluminum Elements				Encl.	Steam Rating 102°C	Hot Water (Ave.) 104°C	99°C	93°C	88°C	82°C	77°C	71°C	66°C	60°C	54°C
Tube Size	Fin Size Millimeters	Fins/ Meter	Fin Thickness	Mtg.(2) Height	Factor 1.00	Factor 1.05	0.95	0.86	0.78	0.69	0.61	0.53	0.45	0.40	0.33
19 mm	70 x 64	180	0.28 mm	362 mm	1500	1580	1420	1290	1170	1040	910	800	670	600	490
25 mm	70 x 64	180	0.28 mm	362 mm	1540	1610	1460	1330	1200	1060	940	820	690	620	510

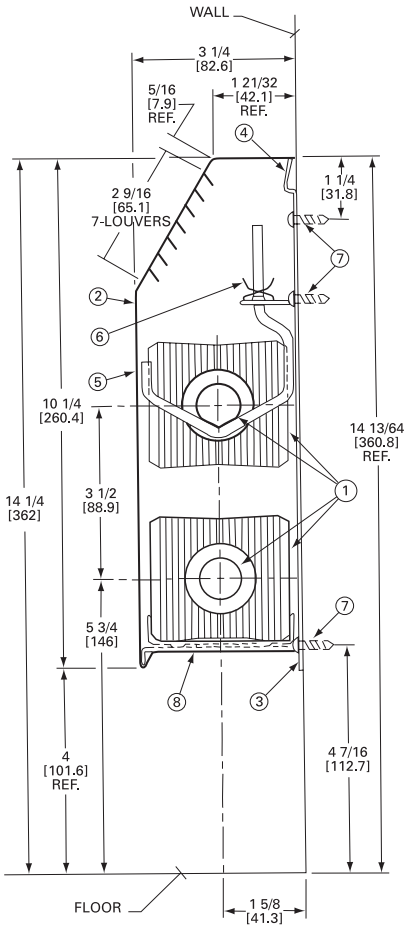
1. Mounting height is the dimension from the floor to the center of the outlet grille to obtain listed capacities.
2. Capacities based on two tiers of element mounted on 3 ½" (89 mm) centers.

Dimensional Data

Model 11S



One Tier [1]



Two Tier [1,2]

Notes:
1. Dimensions shown in [ ] are shown in millimeters.
2. Elements listed in Item 1 element descriptions are the only size elements that can be used in two-tier installations.

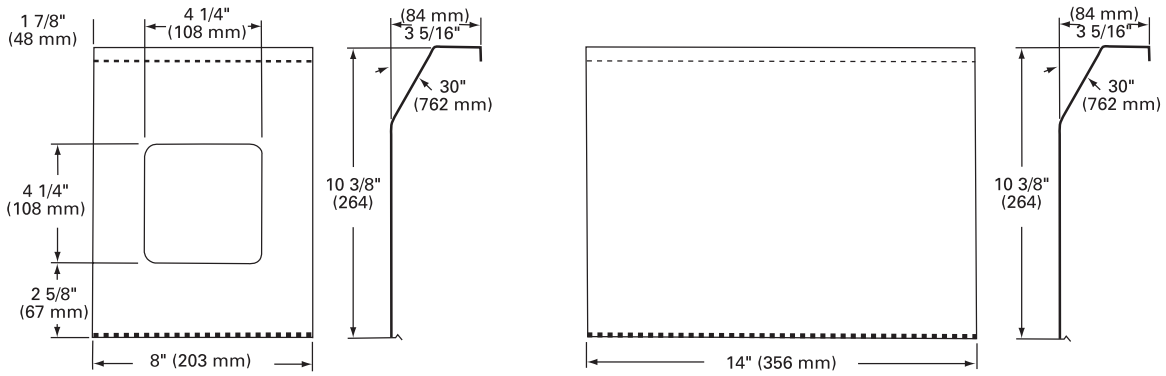
Item	Description	Dwg. No.	Material
1	Element — See Below	See Tab Box	As Specified
2	Enclosure	SRP-47072C	18 (1.2) Ga. CRS
3	Bracket	SRP-47073C	14 (1,9) Ga. CRS
4	Mounting Channel	SRP-12930B	16 (1.5) Ga. .058 Galvaneeled
5	Rod Hanger		.09 6A Volt Basic Wire
6	Rod Hanger Clip	125BA	As Specified
7	Fasteners By Others		
8	Slide Shoe		Plastic

Item 1 Element Description
3/4″ (19) CU Tube — 2 1/4″ x 2 1/2″ (57 x 64) Alum. Fin — .011 (.28) 50 Fin/Ft. (164 Fin/M)
3/4″ (19) CU Tube — 2 3/4″ x 2 1/2″ (70 x 64) Alum. Fin — .011 (.28) 55 Fin/Ft. (180 Fin/M)
1″ (25) CU Tube — 2 3/4″ x 2 1/2″ (70 x 64) Alum. Fin — .011 (.28) 55 Fin/Ft. (180 Fin/M)

Dimensional Data

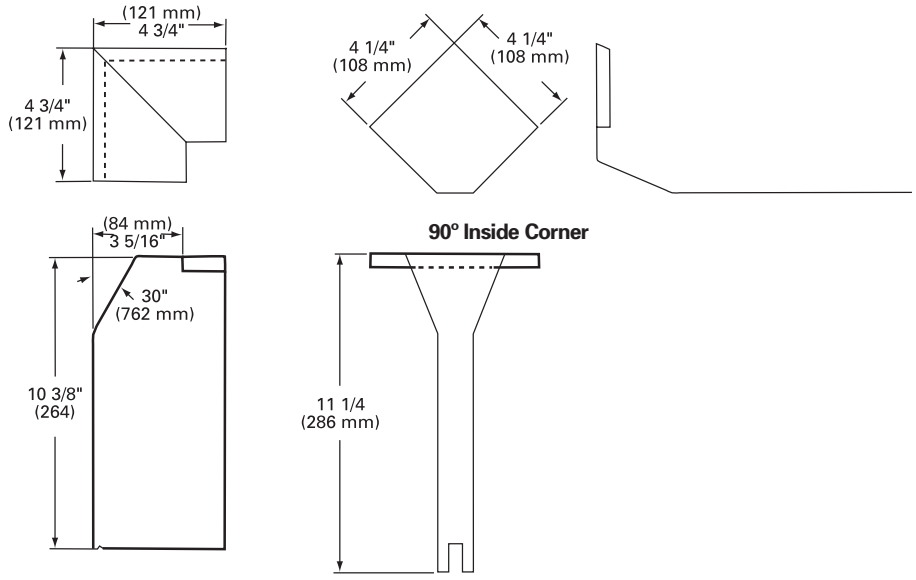
Model 11S

Accessories



Valve Compartment

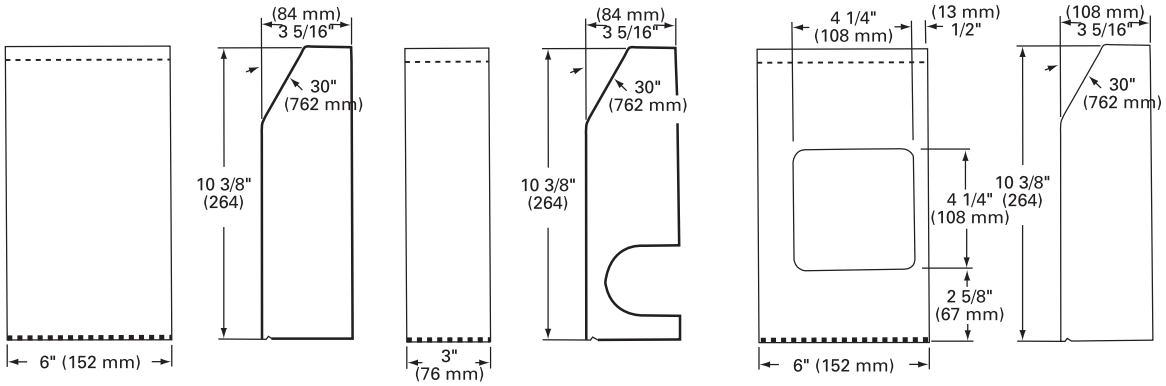
Fill-In Section



90° Inside Corner

2″ (51 mm) Splice Plate

90° Outside Corner



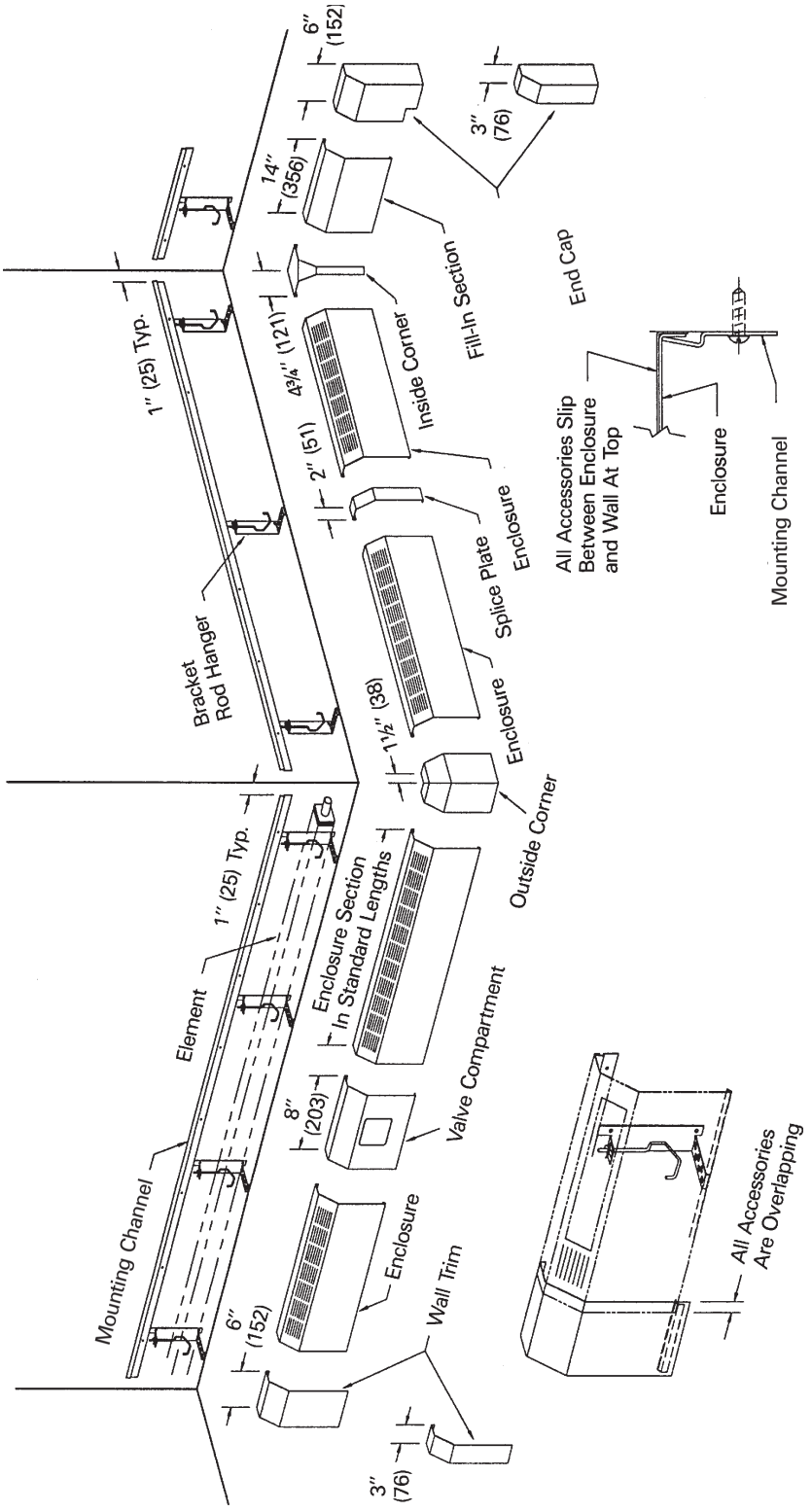
6″ (152 mm) End Without Access Door
Right Hand Shown — Left Hand Opposite

3″ (76 mm) End With Optional Piping Slot
Right Hand Shown — Left Hand Opposite

6″ (152 mm) End With Access Door
Right Hand Shown — Left Hand Opposite

Cover and Accessory Layout

Model 11S



Notes:
1. Enclosure sections available in following standard lengths:
   2' (.61 m) thru 8' (2.4 m) in 1" (.3048 m) increments.
2. Dimensions shown in ( ) are in millimeters.

Mechanical Specifications

Model 11S

General
Natural convection light commercial slope top wall fin (Model 11S) shall be furnished to meet the specified capacity. Enclosure, heating elements, accessories, etc., shall be installed in accordance with the manufacturer's recommendations.

Mounting
Hydronic light commercial slope top wall fin (Model 11S) shall be wall mounted 3 1/2" (89 mm) to 4" (102 mm) above the floor level to obtain catalog capacities.

Enclosure
Sloping top outlet. Enclosure top/front panel shall be of one piece, fabricated from 18 gauge (1.2 mm thickness) steel for strength and durability. The optional 16 gauge (1.5 mm thickness) steel is available. The top/front panel shall be painted with a commercial prime paint as standard. The enclosure shall be 10 1/4" (260 mm) high and 3 1/4" (83 mm) deep. Available in 2' (.61 m), 3' (.91 m), 4' (1.2 m), 5' (1.5 m), 6' (1.8 m), 7' (2.1 m) and 8' (2.4 m) lengths.

Enclosure and Suspension System
Enclosures without visible fasteners for heating elements shall be installed to a continuous *mounting channel* manufactured from 18 gauge (1.2 mm thickness) Galvanneal™ steel at the top with the bottom of the front panel secured to *enclosure brackets* manufactured from Galvanneal steel. They are positioned underneath the mounting channels, offset, and installed to the wall. Adjacent enclosures shall be butt-fit and aligned together with 2" (51 mm) *splice plates*. Each enclosure bracket shall be furnished with a clip fastener to fasten an adjustable *wire hanger* to for mounting of the heating element.

Two-Tier Bracket System*
A two-tier bracket system shall be furnished for installation of two rows of heating elements. An *U-cradle* shall be furnished to mount the first element to the bottom of the enclosure bracket and a shorter wire hanger to mount the second element to the top of the enclosure bracket

*For use with 3/4" (19.1 mm) CA heating elements with 2 3/4" (70 mm) x 2 1/2" (64 mm) size fins only.

Return Pipe Hanger Bracket System
A return pipe hanger bracket system shall be furnished for installation of one row of heating element and return pipe. An U-cradle shall be furnished to mount the heating element to the bottom of the enclosure bracket and a short wire hanger to mount the return pipe to the top of the enclosure bracket.

Back Panel
The *back panel* shall be manufactured from 20 gauge (.91 mm thickness) galvanneal steel and shall be furnished as an extension of the mounting channel in the same height and lengths as the enclosure.

Mechanical Specifications Model 11S

Heating Elements
Copper Tube-Aluminum Fin (CA)
CA heating elements are constructed of seamless copper tubing which has been mechanically expanded into aluminum fins. One tube is swaged for end-to-end joining. Fins are heat- reflecting and interlocked for maximum performance and optimum thermal contact. Six different combinations are available:

3/4" (19 mm) CA
Fin Size: 2 1/4" x 2 1/2" (57 mm x 64 mm) x .011" (.28 mm)
Fin Spacing: 50 fins per foot (164 fins per m)

3/4" (19 mm) CA
Fin Size: 2 3/4" x 2 1/2" (70 mm x 64 mm) x .011" (.28 mm)
Fin Spacing: 55 fins per foot (180 fins per m)

3/4" (19 mm) CA
Fin Size: 2 3/4" x 3 3/4" (70 mm x 95 mm) x .011" (.28 mm)
Fin Spacing: 50 fins per foot (164 fins per m)

1" (25 mm) CA
Fin Size: 2 3/4" x 2 1/2" (70 mm x 64 mm) x .011" (.28 mm)
Fin Spacing: 55 fins per foot (180 fins per m)

1" (25 mm) CA
Fin Size: 2 3/4" x 3 3/4" (70 mm x 95 mm) x .011" (.28 mm)
Fin Spacing: 50 fins per foot (164 fins per m)

1" (25 mm) CA
Fin Size: 2 3/4" x 5" (70 mm x 127 mm) x .020" (.51 mm)
Fin Spacing: 40 fins per foot (131 fins per m) or 50 fins per foot (164 fins per m)

1 1/4" (32 mm) CA
Fin Size: 2 3/4" x 3 3/4" (70 mm x 95 mm) x .020" (.51 mm)
Fin Spacing: 50 fins per foot (164 fins per m)

1 1/4" (32 mm) CA
Fin Size: 2 3/4" x 3 3/4" (70 mm x 95 mm) x .020" (.51 mm)
Fin Spacing: 50 fins per foo (164 fins per m)

1 1/4" (32 mm) CA
Fin Size: 2 3/4" x 5" (70 mm x 127 mm) x .020" (.51 mm)
Fin Spacing: 40 fins per foot (131 fins per m) or 50 fins per foot (164 fins per m)

Heating Elements
Steel Tube-Steel Fins
Steel tube-steel fin heating elements are constructed of condenser tubing which has been mechanically expanded into steel fins. Tube ends are threaded and furnished with NPT threads for maximum performance. The fins are painted black.

1" I.P.S. (25 mm)
Fin Size: 2 3/4" x 5" (70 mm x 127 mm) x .024 (.61 mm)
Fin Spacing: 40 fins per foot (131 fins per m)

1" (25 m) and 1 1/4" (32 mm) I.P.S.
Fin Size: 2 3/4" x 5" (70 mm x 127 mm) x .024 (.61 mm)
Fin Spacing: 40 fins per foot (131 fins per m)

Heating Element Lengths
The heating element can be provided in lengths of :
2' (.61 m)
3' (0.91 m)
4' (1.2 m)
5' (1.5 m)
6' (1.8 m)
7' (2.1 m)
8' (2.4 m)

Accessories
6" (152 mm) end panels with access door
3" (76 mm) and 6" (356) wall trims
8" (152 mm) valve compartment
14" (356 mm) fill-in section
90 and 135 degree inside corners
90 and 135 outside corners

Corners are overlapping and allow for continuous wall-to-wall installation. They are manufactured from 18 gauge (1.2 mm) thickness steel. All accessories are painted with a commercial prime paint as standard.

Color Finish
The top/front panels, splice plates and accessories are available with baked enamel color finishes (optional):
Deluxe beige
Soft dove
Cameo white
Rose mauve
Stone grey
Driftwood grey.

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Stocking Location	La Crosse