



## STEAM/HOT WATER CONVECTORS





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# MODEL NOMENCLATURE



1,2	3,4	5,6	7,8	9	10	11	12	13	14	15	16	17	18	19, 20
ES	CD	EL	EH	MG	EP	G	ADL	DH	D	EC	F	IN	OV	C

## Digits 1 & 2 - Enclosure Style (ES)

SL - Slope-Top Wall Mounted  
 SF - Slope-Top Floor Mounted  
 FL - Flat-Top Floor Mounted  
 PL - Fully-Recessed Wall Mounted

## Digits 3 & 4 - Coil Depth (CD)

04 - 4" Deep  
 06 - 6" Deep  
 08 - 8" Deep

## Digits 5 & 6 - Enclosure Length (EL)

24 - 24" Long  
 36 - 36" Long  
 64 - 64" Long  
 etc.

## Digits 7 & 8 - Enclosure Height (EH)

18 - 18" High  
 20 - 20" High  
 26 - 26" High  
 32 - 32" High

## Digit 9 - Cover/Liner Metal Gauge (MG)

A - 18 Gauge / 20 Gauge (Standard)  
 B - 18 Gauge / 18 Gauge  
 C - 16 Gauge / 20 Gauge  
 D - 16 Gauge / 18 Gauge  
 E - 16 Gauge / 16 Gauge  
 F - 14 Gauge / 20 Gauge  
 G - 14 Gauge / 18 Gauge  
 H - 14 Gauge / 16 Gauge  
 J - 14 Gauge / 14 Gauge

## Digit 10 - End Pockets (EP\*)

0 - None  
 1 - 6" Left Hand End Pocket  
 2 - 6" Right Hand End Pocket  
 3 - 6" Left & Right End Pockets  
 4 - 8" Left Hand End Pocket  
 5 - 8" Right Hand End Pocket  
 6 - 8" Left & Right End Pockets

\*Note: Reduces the coil length by 6" or 8" for 1 end pocket,  
 12" or 16" for 2 end pockets.

## Digit 11 - Grille (G)

L - Louvered (Standard)  
 P - Perforated (Inlet/Outlet)  
 B - Bar Grille-Aluminum (Inlet/Outlet)  
 A - Arched Inlet/Louvered Outlet  
 (not available for Model SL)

## Digit 12 - Access Door Location (ADL)

0 - None  
 3 - Left Side, Top Height  
 1 - Left Side, Center Height  
 5 - Left Side, Bottom Height

4 - Right Side, Top Height  
 2 - Right Side, Center Height  
 6 - Right Side, Bottom Height

8 - Left & Right Side, Top Height  
 7 - Left & Right Side, Center Height  
 9 - Left & Right Side, Bottom Height

## Digit 13 - Door Hardware (DH)

0 - None  
 N - Slot Head (Standard)  
 A - Security Allen Key Latch  
 S - Security Spanner Head Latch

## Digit 14 - Damper (D)

N - None  
 K - Standard Knob Damper  
 S - Security Allen Key Damper

## Digit 15 - Element Connections (EC)

N - Standard Connections  
 B - Optional Reverse Header Connections

## Digit 16 - Fasteners (F)

N - Phillips (Standard)  
 S - Spanner

## Digit 17 - Insulation (IN)

N - None (Standard)  
 A - Back  
 B - Sides, Back, & Top (Top does not apply to SF or SL models)

## Digit 18 - Overlap (OV)

0 - None (Models SL, SF & FL)  
 4 - 4-Sided Overlap (Standard on Model PL)  
 3 - 3-Sided Overlap  
 (Required on Model PL with Arched Inlet)

## Digits 19 & 20 - Color (C)

PR - Standard Prime  
 IV - Ivory  
 BI - Beige  
 AB - Bronze  
 WH - White  
 GA - Gray  
 DG - Dark Gray

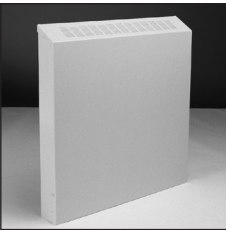


ENCLOSURE STYLES

Convactor cabinets are available in four attractive and functional styles to fit a wide range of architectural requirements.

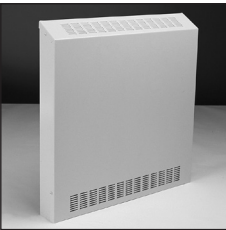
TYPE SL

Fully exposed convector designed for wall mounting. Features a louvered outlet grille in the Slope-Top that keeps debris from accumulating on the top of the unit. The air inlet is directed through the bottom to produce high outputs.



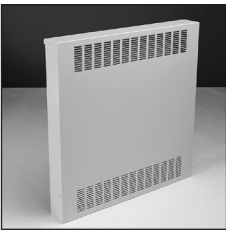
TYPE SF

This fully exposed floor unit has sloping outlet louvers and is designed for mounting to a sidewall. The air inlet is directed through the bottom front inlet louver. An optional arched inlet is available.



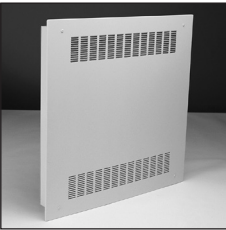
TYPE FL

This fully exposed floor-mounted convector is attached to the wall. The flat top design features front inlet and outlet louvers. The front panel is fastened to the liner.



TYPE PL

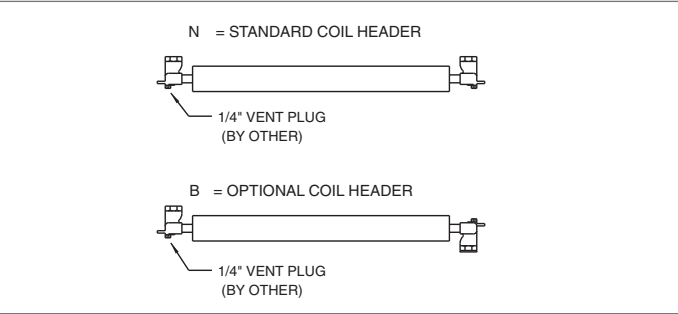
This fully recessed wall convector is designed to provide high outputs. The liner is recessed completely into the wall, and the front panel is fastened to the liner. Front inlet/outlet louvers are standard with sidewall mounted units.



HEATING ELEMENTS

Heating elements are available in three standard nominal depths: 4" (2-tubes), 6" (3-tubes), and 8" (4-tubes). The assembly is protected by shield plates running the entire length of the element, and is supported in enclosure by a welded bracket to eliminate strain on piping or element. Fins of .010" aluminum have integral collars to assure uniform spacing. Tubes are mechanically expanded into collars to permit maximum heat transfer. Headers are cast brass with top or bottom tapplings. One header can be reversed to be mounted "up", while the other is mounted "down", for reverse piping applications.

Figure 4.1 - Element Connections



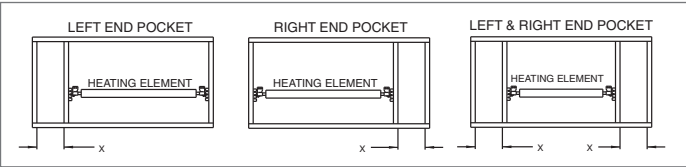
ENCLOSURE CONSTRUCTION

Convectors are specially constructed to satisfy the requirements of strength, durability and safety in many different building applications. Cabinets are all suitably braced and reinforced and are available in heavy-gauge steel for special institutional applications.

END POCKETS

End pockets may be installed at one or both ends of the Cabinet Convectors. The heating element is shortened and a vertical baffle with element support is provided between the end of the element and the end of the cabinet. End pockets are available in 6" or 8" widths. (Note: Size unit capacities for actual coil length.)

Figure 4.2 - End Pocket Options

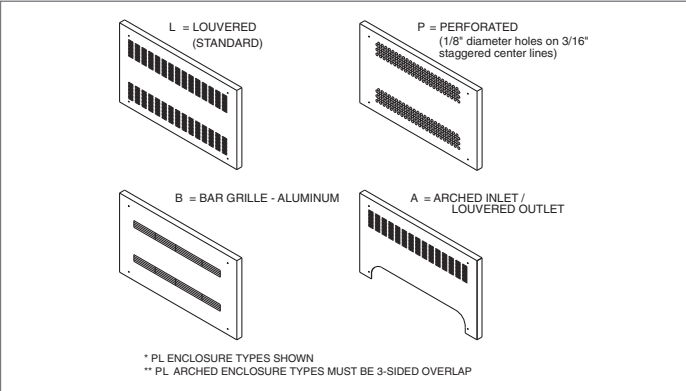


GRILLE OPTIONS

Convactor front covers are available with louvered, perforated, or aluminum bar grille openings. All are designed to allow directional flow of air with maximum free open area. The four cover grille types are as follows:

- Die-formed louvered inlet/outlet. (Standard)
- Heavy-duty architectural inlet/outlet grilles with a deep etched clear anodized (R-204) finish. The aluminum bar grille shall have vanes of continuous extrusion with a 15° deflection.
- Security inlet/outlet perforations with 1/8-inch diameter holes 1/4-inch staggered center lines.
- Arched inlet and a die formed louvered outlet.

Figure 4.3 - Grille



ACCESS DOORS

Access door options are provided in the front panel of cabinet convectors for inspection or operation of valves, traps or air vents. These doors are hinged on one side with a heavy-duty hinge. A concealed 1/4-turn locking device may be provided with an optional Allen-head operator when security conditions dictate. Refer to page 14 for available door locations.

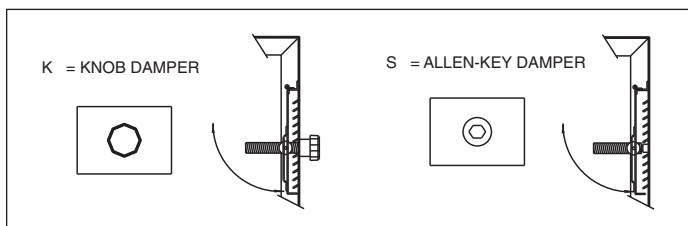
Figure 4.4 - Door Hardware



### DAMPER

The damper assembly covers the entire outlet area of the enclosure and consists of a 20-gauge damper blade, which is flanged top and bottom for additional rigidity. Damper assemblies are available with a knob operator or an optional tamper-resistant operator. The tamper-resistant operator functions with a simple Allen wrench and is particularly valuable in school or institutional settings where supervisory operation only is desired.

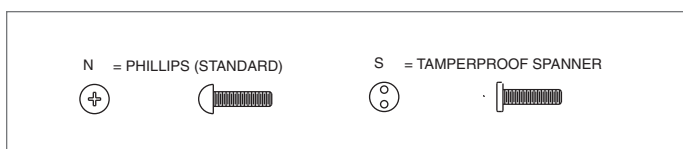
**Figure 5.1 - Damper Options**



### COVER FASTENERS

The removable front cover shall be supported by a top panel clip and fastened at the bottom with a screw on each side. The standard screws are Phillips head with tamper-proof Spanner head screws available as an option.

**Figure 5.2 - Fasteners**



### INSULATION

1/2"-thick fiberglass insulation is available on convector sides, tops, fronts or backs for special applications. (Top insulation does not apply to SF and SL models.)

### SPECIAL FINISH

All convectors are thoroughly cleaned and phosphatized after fabrication and finished with a polyester-epoxy powder coating. As an option, cabinets may be finished in one of the standard decorator colors (see color chart 13-416).

Typical Piping Arrangements

VAPOR AND VACUUM SYSTEMS (STEAM)

Convectors are not recommended for one-pipe steam systems. Typical connections are shown below. Other arrangements, however, can be used.

Fig.1 - This arrangement of down-feed hook-up is used when the steam mains are above the Convectors with drops which are connected to the unit. This arrangement can be used only with freestanding units. The valve is shown inside the cabinet as it can easily be operated by lifting the removable front for an optional access door. A thermostatic control valve with a bulb in the inlet may be substituted for the hand-operated valve shown. The valve can also be installed outside the cabinet if desired. (Valve and piping installed by others.)

Fig. 2 - This shows an arrangement for an up-feed hook-up for semi-recessed or for freestanding units. A straight through tap of proper size may be substituted for the angle trap shown. This allows access to the valve.

On all steam systems, the convector element should pitch down to the return.

HOT WATER SYSTEMS

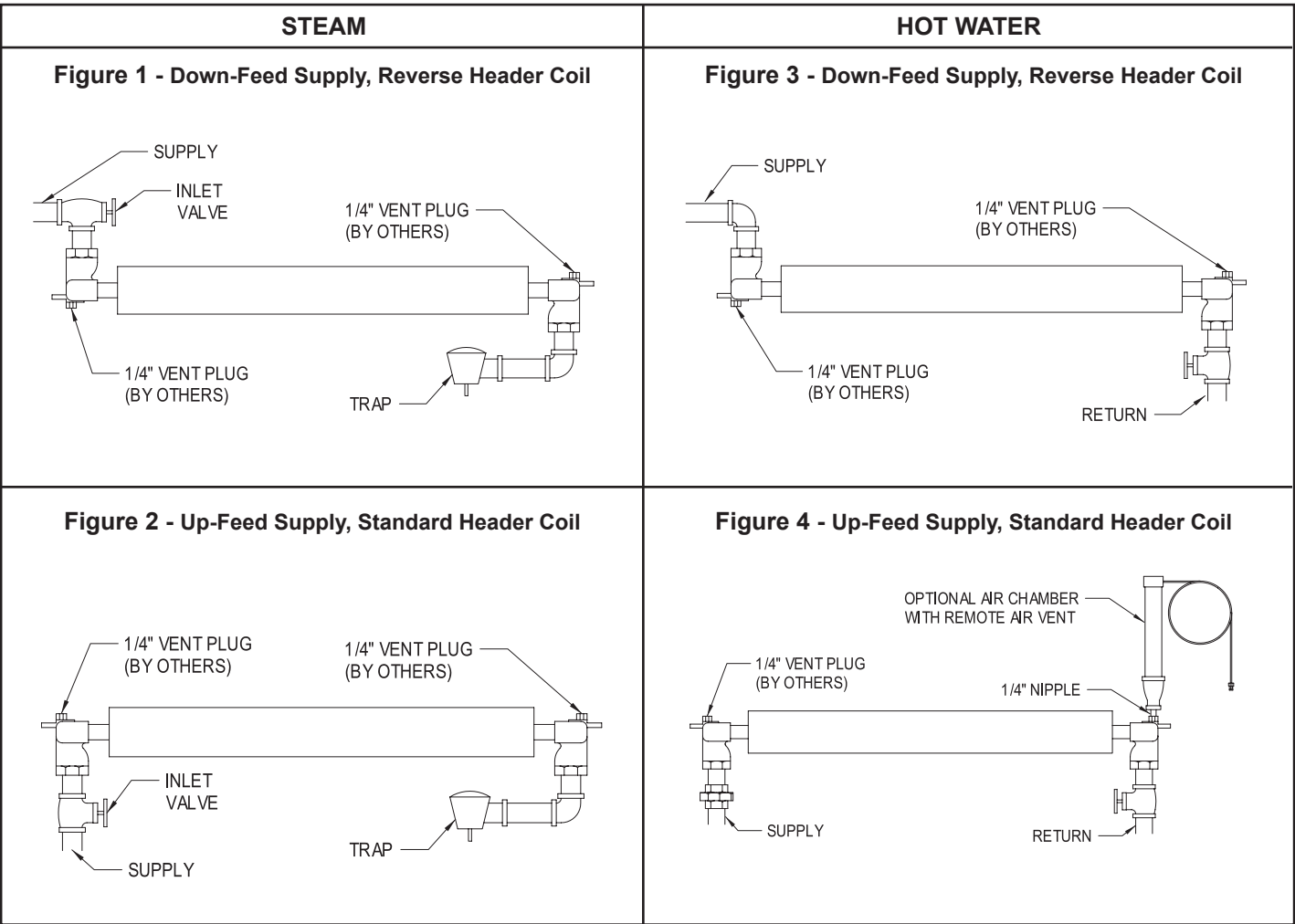
Two different arrangements are shown below for hot water piping connections, down-feed and up-feed.

Fig. 3 - This shows a down-feed arrangement. The supply must be above the tube level of the convector. Air valves are not needed at the individual units. A proper piping system allows for the collection of air and venting at the high point.

On all down-feed systems, the pitch should be down toward the return.

Fig. 4 - This shows an up-feed arrangement which can be used with first floor units when mains are in the basement or where the upper floors are supplied by risers from lower floors. Up-feed systems require venting at each convector, and the pitch should be down toward the supply.

An optional chamber with a remote air vent is available consisting of 3/4" coupling, 3/4" to 1/8" reducing bushing and 6" air assembly.



## Steam

**Table 7.1 - Correction Factors for Steam Pressures Other than 1 Psi Gauge**

To determine the heating capacity (Btu/hr) of a convector at a given steam pressure and entering air temperature (EAT) other than standard, multiply the standard capacity at 1 lb. entering steam pressure and 65° EAT by the factor from this table as shown in Formula 7.1.

Steam psi	Entering Air Temperature (EAT)									
	40	45	50	55	60	65 (std)	70	75	80	85
(std) 1	1.26	1.22	1.15	1.11	1.05	1	0.95	0.9	0.85	0.80
2	1.30	1.26	1.19	1.15	1.09	1.03	0.98	0.93	0.88	0.82
5	1.41	1.37	1.29	1.24	1.18	1.12	1.06	1.01	0.95	0.89
10	1.58	1.53	1.44	1.39	1.31	1.25	1.19	1.13	1.06	0.99
15	1.71	1.66	1.56	1.51	1.43	1.36	1.29	1.22	1.15	1.08
20	1.84	1.78	1.68	1.62	1.53	1.46	1.39	1.31	1.24	1.16
25	1.97	1.90	1.79	1.73	1.64	1.56	1.48	1.40	1.32	1.24
50	2.43	2.35	2.22	2.14	2.03	1.93	1.83	1.74	1.64	1.54

**Table 7.2 - Inlet Grille/Louver Correction Factors**

To determine the actual BTU ratings of a convector with an inlet grille/louver, multiply standard output by the correction factor listed below as shown in Formula 7.1.

Depth	Reduction Factor			
	Height			
	18"	20"	26"	32"
4"	0.946	0.950	0.959	0.980
6"	0.907	0.915	0.942	0.970
8"	0.888	0.900	0.902	0.945

**Table 7.3 - Altitude Correction Factors**

To determine the actual BTU ratings of a convector at varying altitudes, multiply standard output by the correction factor listed below as shown in Formula 7.1.

Altitude	Factor
Sea Level - 1000 ft.	1.000
1000 ft. - 3000 ft.	0.958
3000 ft. - 5000 ft.	0.929
5000 ft. - 7000 ft.	0.900
7000 ft. - 10,000 ft.	0.871

### Formulas: Steam

$$7.1) \quad \text{BTU}_A = \text{BTU}_S \times \text{Factor}$$

$$7.2) \quad \text{BTU}_S = \frac{\text{BTU}_A}{\text{Factor}}$$

$$7.3) \quad C_A = \frac{\text{BTU}_A}{\text{Latent Heat of Steam}}$$

$$7.4) \quad \text{EDR} = \frac{\text{BTU}}{240}$$

### Identification of Symbols

**BTU** = Btu/hr performance

**EDR** = ft<sup>2</sup> EDR

**C<sub>A</sub>** = Condensate (LBS/hr)

### Subscripts

**S** = Standard operating condition (1 lb. steam, 65° F EAT)

**A** = Actual operation conditions

## Hot Water

**Table 8.1 - Correction Factors for Entering Water Temperature and Entering Air Temperature other than Standard**

To determine the heating capacity (Btu/hr) of a convector at an entering water temperature (EWT) and entering air temperature (EAT) other than standard, multiply the capacity at 200°F EWT and 65°F EAT by the factor from this table as shown in formula 8.1.

**NOTE:** GPM must be identical to that at 200°F EWT and 65°F EAT.

Entering Water Temp. (EWT)	Entering Air Temperature (EAT)									
	40	45	50	55	60	65 (std)	70	75	80	85
160	0.83	0.80	0.75	0.73	0.69	0.66	0.62	0.59	0.56	0.52
170	0.97	0.94	0.88	0.85	0.81	0.77	0.73	0.69	0.65	0.61
180	0.98	0.95	0.89	0.86	0.81	0.78	0.74	0.70	0.66	0.62
190	1.12	1.08	1.02	0.99	0.93	0.89	0.84	0.80	0.75	0.71
(std) 200	1.26	1.22	1.15	1.11	1.05	1.00	0.95	0.90	0.85	0.80
210	1.40	1.36	1.28	1.24	1.17	1.12	1.06	1.00	0.94	0.89
220	1.55	1.50	1.41	1.36	1.29	1.23	1.17	1.10	1.04	0.98
230	1.69	1.64	1.54	1.49	1.41	1.34	1.28	1.21	1.14	1.07

**Table 8.2 - Correction Factors for Water Temperature Drop other than Standard**

To determine the actual BTU ratings at water temperature drops (WTD) other than 20°F, use Formula 8.1 to multiply the standard BTU rating, based on a 20°F water temperature drop, by the following factors.

WTD	Factor
10	1.138
20	1
30	0.94

**Table 8.3 - Ethylene Glycol Correction Factors**

To determine the actual BTU ratings of a convector with a water/ethylene glycol solution multiply standard output by the correction factor listed below as shown in Formula 8.1.

Percent Ethylene Glycol	Average Solution Temperature (°F)			
	100	150	200	250
40	0.855	0.875	0.910	0.925
50	0.820	0.850	0.870	0.900
60	0.770	0.800	0.830	0.850
70	0.725	0.750	0.780	0.825
80	0.680	0.715	0.740	0.770
90	0.630	0.660	0.695	0.725
100	0.586	0.620	0.645	0.680

**Table 8.4 - Inlet Grille Correction Factors**

To determine the actual BTU ratings of a convector with an inlet grill, multiply standard output by the correction factor listed below as shown in Formula 8.1.

Depth	Reduction Factor		
	Height		
	20"	26"	32"
4"	0.95	0.96	0.98
6"	0.92	0.94	0.97
8"	0.90	0.90	0.95

**Table 8.5 - Altitude Correction Factors**

To determine the actual BTU ratings of a convector at varying altitudes, multiply standard output by the correction factor listed below as shown in Formula 8.1.

Altitude	Factor
Sea Level - 1000 ft.	1.000
1000 ft. - 3000 ft.	0.958
3000 ft. - 5000 ft.	0.929
5000 ft. - 7000 ft.	0.900
7000 ft. - 10,000 ft.	0.871

### Formulas: Hot Water

$$8.1) \quad BTU_A = BTU_S \times \text{Factor}$$

$$8.2) \quad BTU_S = \frac{BTU_A}{\text{Factor}}$$

### Identification of Symbols

**BTU** = Btu/hr performance

### Subscripts

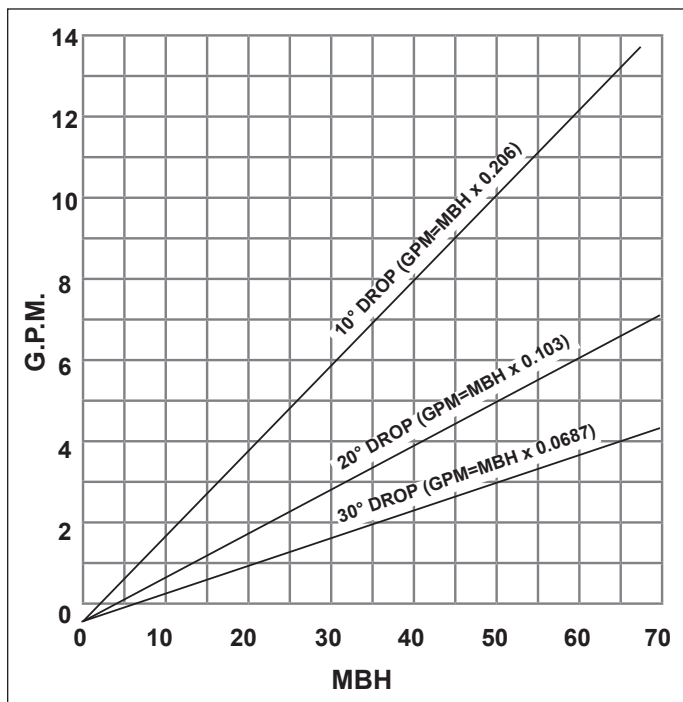
**S** = Standard operating condition (200° F EWT, 65° F EAT)

**A** = Actual operation conditions



**Figure 9.1 - Factors for Calculating Flow Rate (in GPM)**

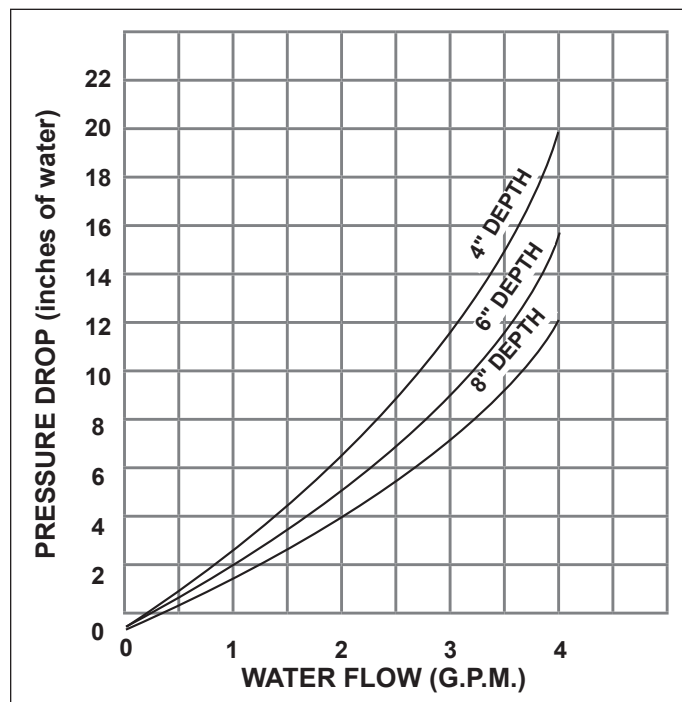
The chart below may be used to determine approximate GPM for a desired MBH for various water temperature drops.



**Example:** MBH 30  
WTD 30  
 $GPM = 30 \times 0.0687 = 2.06 \text{ GPM}$

**Figure 9.2 - Pressure Drop Convectors - 64" Long**

Curves showing pressure drop for determining pressure head requirement. Based on 64" length units, but applicable to shorter units, as most loss is due to headers.



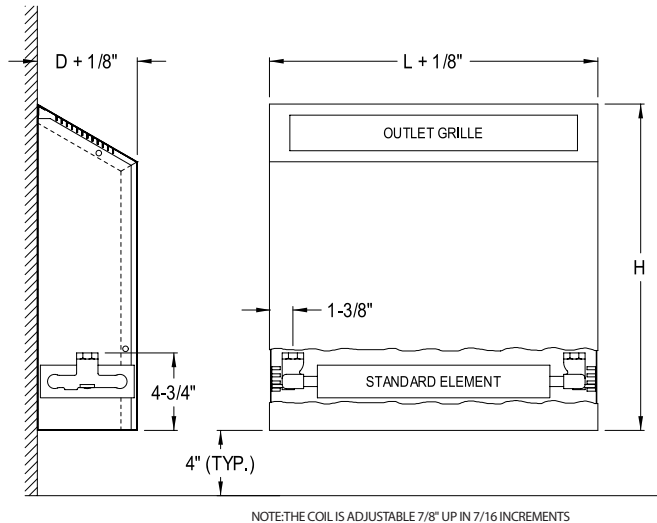
## Models SL and SF Slope-Top Wall and Floor Mounted

### MODEL SL SLOPE-TOP WALL MOUNTED

#### UNIT DIMENSIONS

L = Length, H = Height, D = Depth

Available dimensional combinations are listed in the performance data on the next page.

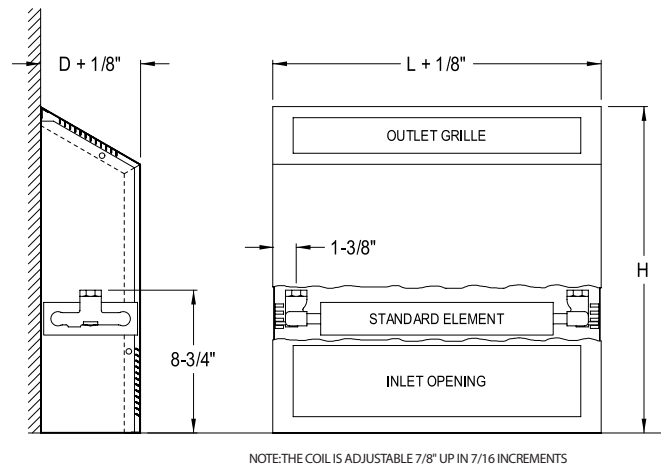


### MODEL SF SLOPE-TOP FLOOR MOUNTED

#### UNIT DIMENSIONS

L = Length, H = Height, D = Depth

Available dimensional combinations are listed in the performance data on the next page.



### Standard Features

- Cabinet - 18 gauge front, 20 gauge sides and back panel
- Cabinet Dimensions - (24"-64")L x (4"-8")D x (18"-32")H
- Polyester-epoxy powder coating - Prime finish
- Heating Elements -  $1/2"$  copper tube, 0.010" aluminum fins
- Opposite end connections
- Louvered air outlet grilles

### Options

- Damper - Knob or Allen-Key
- Outlet grill variations (see page 5)
- Access door options (see page 14)
- Insulation -  $1/2"$
- Tamper proof fasteners for front panels
- Decorator colors available (see chart 13-416)
- End pockets
- Front - 14 or 16 gauge with 14, 16, or 18 gauge liner

## Model SL and SF Slope-Top Wall and Floor Mounted

Table 11.1 - Steam Performance Data - BTU/HR at 1 lb. Steam, 65°F EAT ① ②

		Height							
		SL				SF			
Depth	Length	18"	20"	26"	32"	18"	20"	26"	32"
4"	24"	3,936	4,056	4,248	4,416	3,600	3,744	4,080	4,248
	28"	4,776	4,896	5,112	5,304	4,320	4,488	4,896	5,112
	36"	6,456	6,624	6,936	7,248	5,904	6,096	6,624	6,960
	40"	7,296	7,488	7,824	8,112	6,648	6,864	7,512	7,848
	48"	8,952	9,192	9,600	9,984	8,136	8,448	9,192	9,624
	52"	9,744	9,936	10,440	10,848	8,832	9,144	9,936	10,440
	60"	11,400	11,616	12,192	12,816	10,248	10,704	11,616	12,192
6"	64"	12,288	12,528	13,128	13,920	10,992	11,544	12,528	13,176
	24"	6,264	6,432	6,936	7,176	5,424	5,736	6,528	6,960
	28"	7,560	7,752	8,328	8,688	6,528	6,888	7,752	8,328
	36"	10,152	10,464	11,232	11,616	8,904	9,336	10,488	11,280
	40"	11,448	11,784	12,648	13,152	9,984	10,536	11,808	12,696
	48"	14,064	14,448	15,528	16,104	12,336	12,888	14,496	15,576
	52"	15,288	15,720	16,896	17,592	13,536	14,016	15,720	16,896
8"	60"	17,880	18,360	19,728	20,568	15,792	16,344	18,360	19,728
	64"	19,224	19,752	21,216	22,080	16,848	17,640	19,776	21,312
	24"	7,776	8,016	8,640	9,000	7,200	7,392	8,064	8,664
	28"	9,408	9,648	10,416	10,824	8,640	8,880	9,648	10,416
	36"	12,720	13,080	14,112	14,688	11,760	12,144	13,776	14,136
	40"	14,376	14,784	15,936	16,584	13,200	13,656	14,856	16,008
	48"	17,664	18,096	19,560	20,376	16,320	16,776	17,760	19,656
	52"	19,248	19,752	21,336	22,224	17,712	18,192	19,752	21,336
	60"	22,512	23,112	24,960	26,040	20,736	21,288	23,112	24,960
	64"	24,216	24,888	26,832	28,008	22,392	22,992	24,960	26,928

① Refer to page 7 for correction factors for non-standard conditions

② Ratings above are based on open inlet, derating for inlet louvers is required, see page 7 for derating factors

Table 11.2 - Hot Water Performance Data - Slope Top Outlet Types (SL and SF)  
BTU/HR at 200°F EWT, 65°F EAT, 20°F WTD (190°F AWT) ① ②

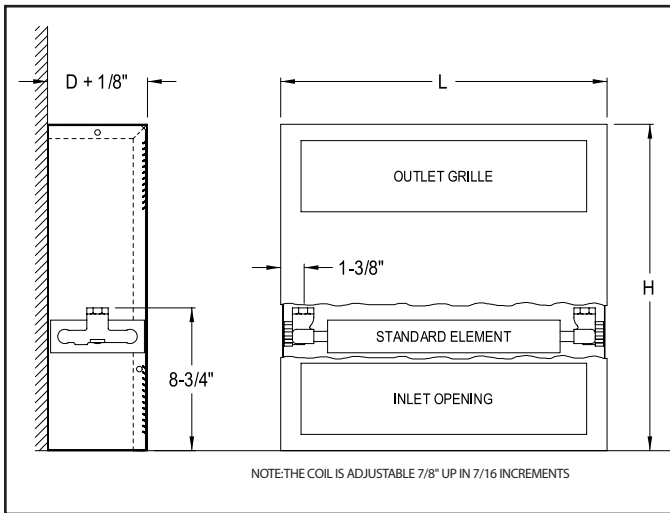
		Height							
		SL				SF			
Depth	Length	18"	20"	26"	32"	18"	20"	26"	32"
4"	24"	2,608	2,687	2,814	2,926	2,385	2,480	2,703	2,814
	28"	3,164	3,244	3,387	3,514	2,862	2,973	3,244	3,387
	36"	4,277	4,388	4,595	4,802	3,911	4,039	4,388	4,611
	40"	4,834	4,961	5,183	5,374	4,404	4,547	4,977	5,199
	48"	5,931	6,090	6,360	6,614	5,390	5,597	6,090	6,376
	52"	6,455	6,583	6,917	7,187	5,851	6,058	6,583	6,917
	60"	7,553	7,696	8,077	8,491	6,789	7,091	7,696	8,077
6"	64"	8,141	8,300	8,697	9,222	7,282	7,648	8,300	8,729
	24"	4,150	4,261	4,595	4,754	3,593	3,800	4,325	4,611
	28"	5,009	5,136	5,517	5,756	4,325	4,563	5,136	5,517
	36"	6,726	6,932	7,441	7,696	5,899	6,185	6,948	7,473
	40"	7,584	7,807	8,379	8,713	6,614	6,980	7,823	8,411
	48"	9,317	9,572	10,287	10,669	8,173	8,538	9,604	10,319
	52"	10,128	10,415	11,194	11,655	8,968	9,286	10,415	11,194
8"	60"	11,846	12,164	13,070	13,626	10,462	10,828	12,164	13,070
	64"	12,736	13,086	14,056	14,628	11,162	11,687	13,102	14,119
	24"	5,152	5,311	5,724	5,963	4,770	4,897	5,342	5,740
	28"	6,233	6,392	6,901	7,171	5,724	5,883	6,392	6,901
	36"	8,427	8,666	9,349	9,731	7,791	8,045	9,127	9,365
	40"	9,524	9,794	10,558	10,987	8,745	9,047	9,842	10,605
	48"	11,702	11,989	12,959	13,499	10,812	11,114	11,766	13,022
	52"	12,752	13,086	14,135	14,723	11,734	12,052	13,086	14,135
	60"	14,914	15,312	16,536	17,252	13,738	14,103	15,312	16,536
	64"	16,043	16,488	17,776	18,555	14,835	15,232	16,536	17,840

① Refer to page 8 for correction factors for non-standard conditions

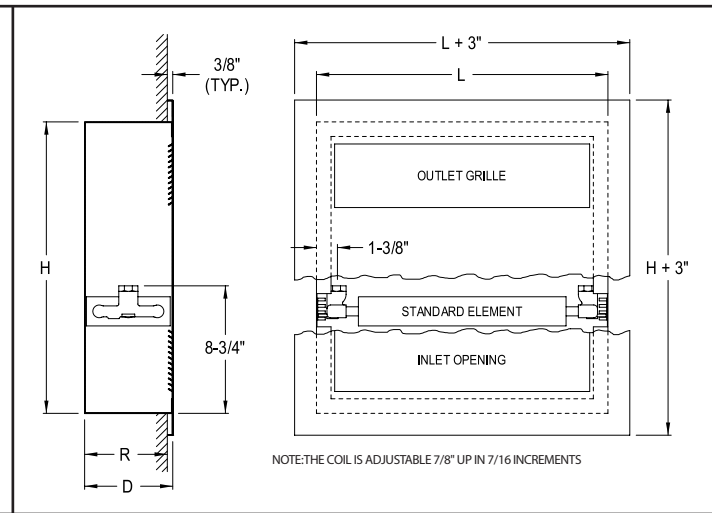
② Ratings above are based on open inlet, derating for inlet louvers is required, see page 8 for derating factors

## Model FL and PL Flat-Top Floor and Wall Mounted

### MODEL FL FLAT TOP FLOOR MOUNTED



### MODEL PL FULLY RECESSED WALL MOUNTED



#### Standard Features

- Cabinet - 18 gauge front, 20 gauge sides and back panel
- Cabinet Dimensions - (24"-64")L x (4"-8")D x (18"-32")H
- Polyester-epoxy powder coating - Prime finish
- Heating Elements - 1/2" copper tube, 0.010" aluminum fins
- Opposite end connections
- Louvered air outlet grilles

#### Options

- Damper - Knob or Allen-Key
- Outlet grill variations (see page 5)
- Access door options (see page 14)
- Insulation - 1/2"
- Tamper proof fasteners for front panels
- Decorator colors available (see color chart 13-416)
- End pockets
- Front - 14 or 16 gauge with 14, 16, or 18 gauge liner

## Model FL and PL Flat-Top Floor and Wall Mounted

Table 13.1 - Steam Performance Data - BTU/HR at 1 lb. Steam, 65°F EAT ① ②

		Height							
		FL				PL			
Depth	Length	18"	20"	26"	32"	18"	20"	26"	32"
4"	24"	2,760	3,120	3,696	3,984	2,760	3,120	3,696	3,984
	28"	3,312	3,816	4,464	4,776	3,312	3,816	4,464	4,776
	36"	4,368	5,136	6,000	6,480	4,368	5,136	6,000	6,480
	40"	4,896	5,760	6,768	7,296	4,896	5,760	6,768	7,296
	48"	5,952	7,080	8,304	8,952	5,952	7,080	8,304	8,952
	52"	6,552	7,800	9,072	9,744	6,552	7,800	9,072	9,744
	60"	7,656	9,120	10,608	11,400	7,656	9,120	10,608	11,400
6"	64"	8,136	9,744	11,376	12,264	8,136	9,744	11,376	12,264
	24"	4,032	4,536	5,520	6,144	4,032	4,536	5,520	6,144
	28"	4,848	5,520	6,672	7,368	4,848	5,520	6,672	7,368
	36"	6,432	7,344	9,000	9,912	6,432	7,344	9,000	9,912
	40"	7,248	8,328	10,152	11,184	7,248	8,328	10,152	11,184
	48"	8,880	10,200	12,432	13,656	8,880	10,200	12,432	13,656
	52"	9,744	11,064	13,536	14,904	9,744	11,064	13,536	14,904
8"	60"	11,400	13,056	15,840	17,424	11,400	13,056	15,840	17,424
	64"	12,192	13,992	17,016	18,744	12,192	13,992	17,016	18,744
	24"	5,112	5,712	6,552	7,080	5,112	5,712	6,552	7,080
	28"	6,384	6,960	7,896	8,520	6,384	6,960	7,896	8,520
	36"	8,712	9,312	10,656	11,520	8,712	9,312	10,656	11,520
	40"	9,864	10,536	12,024	12,984	9,864	10,536	12,024	12,984
	48"	11,952	12,960	14,736	15,984	11,952	12,960	14,736	15,984
	52"	13,464	14,232	16,104	17,424	13,464	14,232	16,104	17,424
	60"	15,768	16,656	18,840	20,376	15,768	16,656	18,840	20,376
	64"	16,776	17,784	20,256	21,936	16,776	17,784	20,256	21,936

① Refer to page 7 for correction factors for non-standard conditions

② Ratings above are based on open inlet, derating for inlet louvers is required, see page 7 for derating factors

Table 13.2 - Hot Water Performance Data - Flat Top Outlet Types (FL and PL)  
BTU/HR at 200°F EWT, 65°F EAT, 20°F WTD (190°F AWT) ① ②

		Height							
		FL				PL			
Depth	Length	18"	20"	26"	32"	18"	20"	26"	32"
4"	24"	1,829	2,067	2,449	2,639	1,829	2,067	2,449	2,639
	28"	2,194	2,528	2,957	3,164	2,194	2,528	2,957	3,164
	36"	2,894	3,403	3,975	4,293	2,894	3,403	3,975	4,293
	40"	3,244	3,816	4,484	4,834	3,244	3,816	4,484	4,834
	48"	3,943	4,691	5,501	5,931	3,943	4,691	5,501	5,931
	52"	4,341	5,168	6,010	6,455	4,341	5,168	6,010	6,455
	60"	5,072	6,042	7,028	7,553	5,072	6,042	7,028	7,553
6"	64"	5,390	6,455	7,537	8,125	5,390	6,455	7,537	8,125
	24"	2,671	3,005	3,657	4,070	2,671	3,005	3,657	4,070
	28"	3,212	3,657	4,420	4,881	3,212	3,657	4,420	4,881
	36"	4,261	4,865	5,963	6,567	4,261	4,865	5,963	6,567
	40"	4,802	5,517	6,726	7,409	4,802	5,517	6,726	7,409
	48"	5,883	6,758	8,236	9,047	5,883	6,758	8,236	9,047
	52"	6,455	7,330	8,968	9,874	6,455	7,330	8,968	9,874
8"	60"	7,553	8,650	10,494	11,543	7,553	8,650	10,494	11,543
	64"	8,077	9,270	11,273	12,418	8,077	9,270	11,273	12,418
	24"	3,387	3,784	4,341	4,691	3,387	3,784	4,341	4,691
	28"	4,229	4,611	5,231	5,645	4,229	4,611	5,231	5,645
	36"	5,772	6,169	7,060	7,632	5,772	6,169	7,060	7,632
	40"	6,535	6,980	7,966	8,602	6,535	6,980	7,966	8,602
	48"	7,918	8,586	9,763	10,589	7,918	8,586	9,763	10,589
	52"	8,920	9,429	10,669	11,543	8,920	9,429	10,669	11,543
	60"	10,446	11,035	12,482	13,499	10,446	11,035	12,482	13,499
	64"	11,114	11,782	13,420	14,533	11,114	11,782	13,420	14,533

① Refer to page 8 for correction factors for non-standard conditions

② Ratings above are based on open inlet, derating for inlet louvers is required, see page 8 for derating factors

Figure 14.1 - Access Door Locations (See Table 14.1)

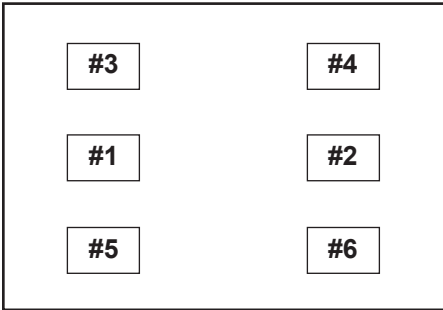


Table 14.1 - Digit 12 - Access Door Locations (See Figure 14.1) ① ②

Model	Arched Inlet	Height	Length	One Door						Two Doors		
				Left Side			Right Side			Left and Right Side		
				Top	Center	Bottom	Top	Center	Bottom	Top	Center	Bottom
SF	No	18"	24" or 28"			5			6			
			36" - 64"			5			6			9
		20" - 32"	All		1	5		2	6		7	9
	Yes	18"	24" or 28"									
			36" - 64"									
		20" - 32"	All		1			2			7	
SL	No	18"	All		1			2			7	
		20" - 32"	All		1			2			7	
FL	No	18"	24" or 28"	3		5	4		6			
			36" - 64"	3		5	4		6	8		9
		20" - 32"	All	3	1	5	4	2	6	8	7	9
	Yes	18"	24" or 28"	3			4					
			36" - 64"	3			4			8		
		20" - 32"	All	3	1		4	2		8	7	
PL	No	18"	24" or 28"	3		5	4		6			
			36" - 64"	3		5	4		6	8		9
		20"	24" or 28"	3	1	5	4	2	6			
			36" - 64"	3		5	4		6	8		9
		26" or 32"	All	3	1	5	4	2	6	8	7	9
	Yes	18"	24" or 28"	3			4					
			36" - 64"	3			4			8		
		20"	24" or 28"	3	1		4	2				
			36" - 64"	3			4			8		
		26" or 32"	All	3	1		4	2		8	7	

① Doors are 5" wide and generally 5" high (4" for all 18" high convectors)

② Example: What doors are available for an FL enclosure with arched inlet, 26" height, and 24" length?

Answer: Values for Digit 12 of the model number appear in the chart for Left Top (Digit 12=3), Left Center (Digit 12=1), Right Top (Digit 12=4), Right Center (Digit 12=2), Left and Right Top (Digit 12=8), or Left and Right Center (Digit 12=7). Doors are not available in any other location for this convector selection.

## GENERAL

Contractor shall install Modine brand steam/hot water cabinet convector, according to manufacturers published information and applicable local codes.

## CABINET

The convector cabinet shall be:

- a) Wall mounted with a sloping top outlet, Model SL.
- b) Floor mounted with a sloping top outlet, Model SF.
- c) Floor mounted with a flat top, front outlet, Model FL.
- d) Recessed wall mounted with a front outlet, Model PL.

The front cover and back liner shall be constructed of cold rolled steel. The material thickness shall be:

- a) 18 Ga Cover, 20 Ga Liner (Standard)
- b) 18 Ga Cover, 18 Ga Liner
- c) 16 Ga Cover, 20 Ga Liner
- d) 16 Ga Cover, 18 Ga Liner
- e) 16 Ga Cover, 16 Ga Liner
- f) 14 Ga Cover, 20 Ga Liner
- g) 14 Ga Cover, 18 Ga Liner
- h) 14 Ga Cover, 16 Ga Liner
- i) 14 Ga Cover, 14 Ga Liner

The removable front cover shall be supported by a top panel clip and fastened at the bottom with a screw on each side.

The screw shall be:

- a) Phillips head (Standard)
- b) Spanner head

The convector cabinet shall be reinforced and braced where necessary to provide additional stiffness. The heating element supports allow for pitch adjustments of up to 1 inch for return of condensation in steam systems and as required by piping arrangements.

The cover and liner shall be degreased and chemically phosphatized prior to the application of a polyester-epoxy powder coating per the latest Modine color chart 13-416.

The front cover shall have:

- a) a die-formed louvered inlet/outlet. (Standard)
- b) a heavy-duty architectural inlet/outlet grilles with a deep etched clear anodized (R-204) finish. The aluminum bar grille shall have vanes of continuous extrusion with a 15° deflection.
- c) security inlet/outlet perforations with 1/8-inch diameter holes 1/4-inch staggered center lines.
- d) an arched inlet and a die formed louvered outlet.

All openings are designed to allow directional flow of air with the maximum amount of free open area. All openings are designed to be "pencil proof".

(Optional) The front cover shall feature a damper, operated using heavy-duty screws with 10 threads per inch for variable airflow control. Damper vanes shall be fabricated from 20-gauge cold rolled steel and painted to match the enclosure color. The damper vane shall extend the full length of the outlet opening. The operator shall be:

- a) Knob type.
- b) security Allen-Key type.

(Optional) The convector shall have end pockets for location of valves, shut-offs, or other miscellaneous piping components by others. There shall be a baffle between the element header and the end of the cabinet. The end pocket size and location shall be:

- a) 6" Left Hand
- b) 6" Right Hand
- c) 6" Left and Right Hand
- d) 8" Left Hand
- e) 8" Right Hand
- f) 8" Left and Right Hand

(Optional) The convectors shall have flush mounted, hinged access door(s) located on the front cover at the:

- a) Left Side, Top Height
- b) Left Side, Center Height
- c) Left Side, Bottom Height
- d) Right Side, Top Height
- e) Right Side, Center Height
- f) Right Side, Bottom Height
- g) Left and Right Side, Top Height
- h) Left and Right Side, Center Height
- i) Left and Right Side, Bottom Height

The door(s) shall be reinforced from behind with angle stiffeners. Doors shall be held closed using screw fasteners. The screws shall be:

- a) Phillips head (Standard)
- b) Allen key head
- c) Spanner head

(Optional) The convectors shall include 1/2-inch insulation, permanently bonded to the inside of the cabinet liner.

## CONVECTOR ELEMENT

The convector heating element is designed for either two-pipe steam or hot water heating systems. They are of non-ferrous construction made up of 1/2-inch nominal diameter copper tubing and die-cut aluminum fins with a thickness of no less than .010 inches. The fins have integral collars which provide maximum heat transfer between the tubes and fins. The tubes are mechanically bonded to the fins to ensure permanent contact. The element shall be:

- a) 4" deep with 2 tubes.
- b) 6" deep with 3 tubes.
- c) 8" deep with 4 tubes.

The entire fin assembly shall be encased in a heavy-gauge galvanized steel frame with spacers locked at regular intervals to provide added protection to the finned element. Headers have a 3/4-inch FPT tapping on each end. The element shall be supplied with:

- a) both header tappings facing down.
- b) reverse header connection tappings, one facing up and the other down.

Assembled heating element shall be hydrostatically tested at 300 PSI. Maximum working pressure for steam is 50 PSI.

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

#### *HVAC*

- Unit Heaters:
  - Gas
  - Hydronic
  - Electric
  - Oil
- Ceiling Cassettes
- Duct Furnaces
- Hydronic Cabinet Unit Heaters, Fin Tube, Convectors
- Infrared Heaters
- Make-up Air Systems
- Unit Ventilators

#### *Ventilation*

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  - Water/Ground Source Heat Pump
  - Horizontal/Vertical Unit Ventilators

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- Water-to-Water
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- Combination

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



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