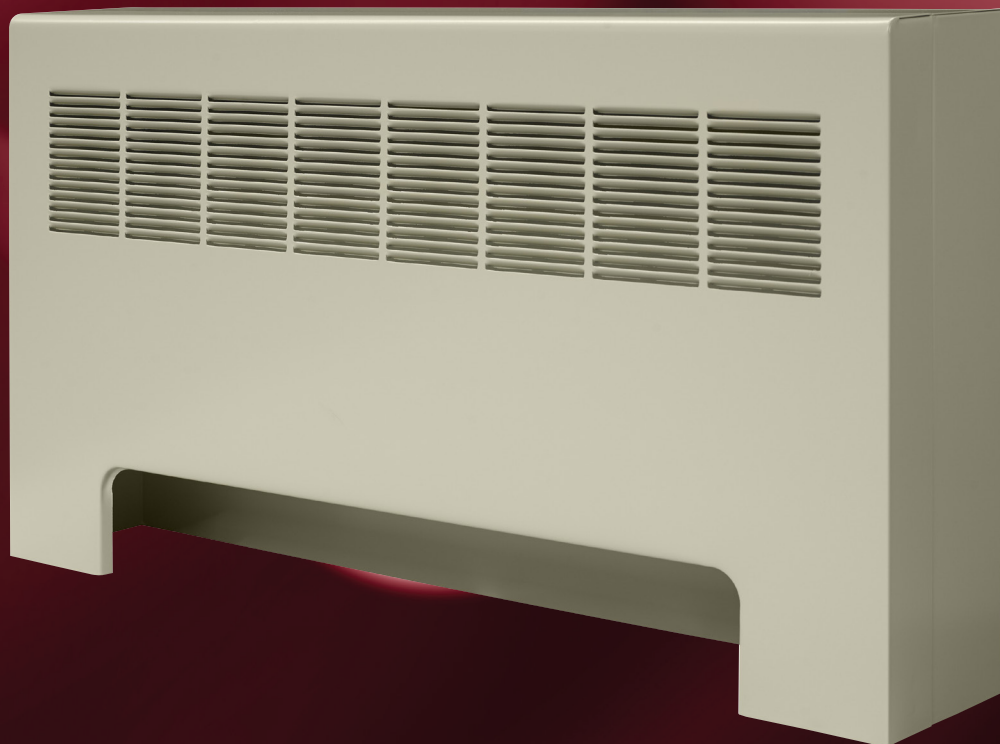


# CONVECTORS



Beacon Morris



# Convector Radiation

Beacon Morris Convectors are engineered for both forced hot water and two-pipe steam heating system installation with heating elements of lightweight non-ferrous construction. They are available in (7) basic types to meet a wide range of heating applications in institutional buildings, hospitals, hotels, office buildings, schools, apartments and other structures. A variety of cabinet enclosure styles permits the selection of an attractive and functional installation to blend with any building interior — modern or traditional.

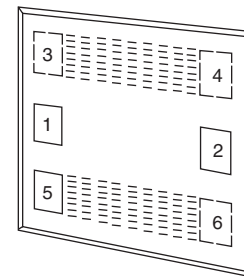
Designed for maximum flexibility of installation arrangement, Beacon Morris Convectors are available in free-standing, semi-recessed, wall hung and fully recessed models. Enclosures are formed from heavy-gauge steel with a durable baked powder prime finish.



END POCKET

**End Pockets** — End pockets may be provided at each or either end of Beacon Morris institutional convectors to protect and conceal valves, traps and piping. A left-hand end pocket is illustrated. The liner is extended and a baffle welded to the back of the liner. The cabinet front is extended and grille is offset in length to line up with heating element. Length of end pocket is determined by using a standard element. Specify right or left hand. Available in 4" increments only. One end pocket only on 64" long units. No end pockets available on SR-A or RF-A 64" units.  
 Note: Fronts and liners increase in length but the coil length remains the same.

**Access Doors** — Access Doors (4 1/4" square) may be provided in the front panel of the convectors for inspection or operation of valves, traps, or air vents. These doors are hinged on top. Concealed 1/4 turn locking device is provided with an Allen-head operator. Access doors are available in the standard locations illustrated. For units 24" or less in height, not all positions are available, consult factory. See table 5 on page 14 for derating factors.



ACCESS DOOR LOCATIONS

**Heating Elements** — Heating elements are available in three nominal depths — 4" with 2-tube element, 6" with 3-tube element, 8" with 4-tube element. Fins of .010" aluminum have integral collars to assure uniform spacing. Tubes are mechanically expanded into collars to permit maximum heat transfer. Both headers are cast bronze with single - 3/4" NPT tappings. A dual top and bottom 3/4" tapped header is available. This option allows for supply and return piping to come from the top or bottom. Combined with the standard single header, piping direction is no longer a problem. Heating element assembly is protected by formed shield plates front and back running the entire length of element, and supported in enclosure by a welded bracket to eliminate strain on piping or element.

**Tamper-Resistant Fasteners** — Our Convector are provided with friction fit slip joiners. Hex Head Locks, to fasten fronts securely may be provided on special applications.

**Concealed Fasteners** — are available with Hex-head operator. Head of operator recessed 1/8" inside cabinet. Fastener engages keeper, spot welded to inside of liner.



STANDARD FASTENER FOR RECESSED UNITS

**Damper** — The assembly consists of a triple lead screw and a heavy gauge damper blade, flanged top and bottom for additional rigidity, that covers the entire louvered area of the enclosure.

Damper assemblies are available with either a knob operator or a tamper resistant operator which is simply operated with a hex key. The later is particularly valuable in school or institutional work where only supervisory operation is desired.

Institutional convectors are specially constructed to satisfy the requirements of strength and safety demanded by institutional building application.

**Heavy Gauge Steel** — To withstand the abuse often received on this type of application, institutional convectors are available in heavy gauge steel upon specific request. (Front and back available in 18, 16 and 14-gauge)

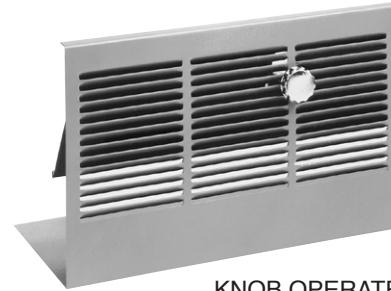
**Perforated Outlet and/or Inlet** — Consult factory for unit styles offered with 14-gauge perforated front panels.

**Dual Inlet Header** — Allows piping from either top or bottom.

**Non-Standard Sizes** — Sizes other than standard can be provided for institutional buildings. Please consult factory with requirements.

**Insulation** — 1/2" thick fiber-glass insulation is available on convector backs, or sides and tops for special application. (Top does not apply to sloping models)

**Special Finish** — All our Convectors are thoroughly cleaned after fabrication and provided with a high quality baked powder prime finish. As an option, cabinet may be finished in one of the standard Convector colors also in baked powder.



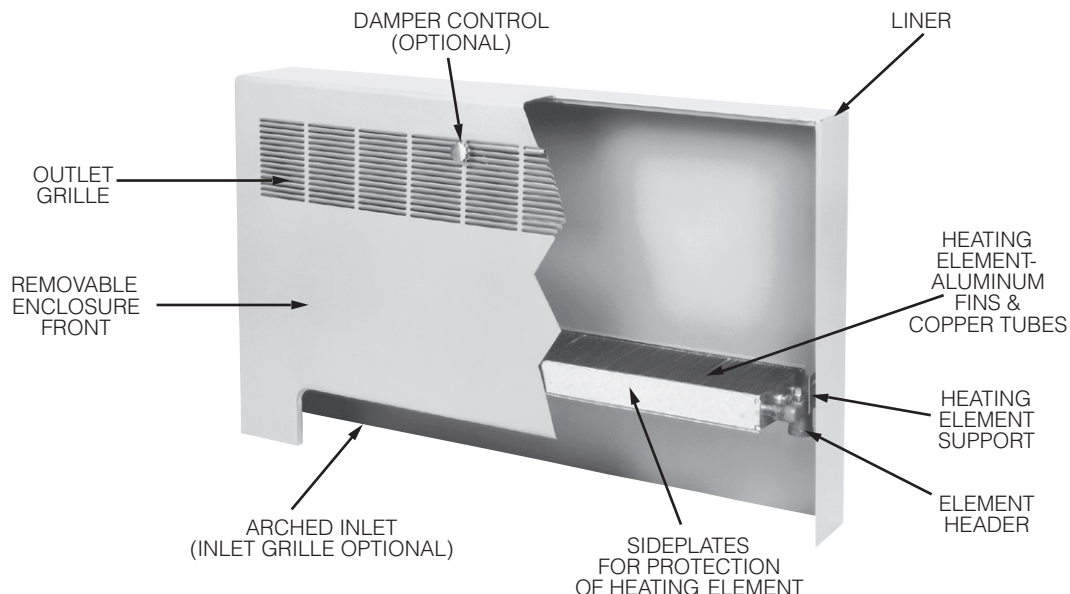
KNOB OPERATED DAMPER OPERATOR



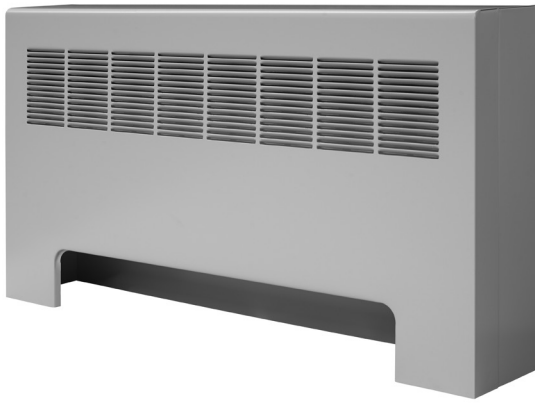
INSTITUTIONAL DAMPER OPERATOR

**ENCLOSURES**

Features of enclosure construction are shown below. Note that the element support provides a simple and inexpensive means of leveling the heating element or giving it an appropriate pitch for steam installation. Enclosures are formed steel with front of 18-gauge, back and sides of 20-gauge thickness. Enclosure fronts are separate and fastened by friction fit slip joiners at sides of the front piece. Back, top and sides are an integral welded structure in all models, except wall hung slope top model, which has top integral with front. Design details of individual units are shown on succeeding pages.



# Types of Convectors



## **FS-A/FSG-A**

**Type FS-A:** The type FS-A Free-Standing Cabinet Enclosure is designed to be used exposed and fitted flush against the wall. Readily installed without alteration of wall interior, the FS-A enclosure is frequently used for system modernization where it is desirable to avoid the expense of recessing the unit in the wall. Arched inlet shown is standard. Unit may be provided with integral inlet grille, (FSG-A). See page 16.



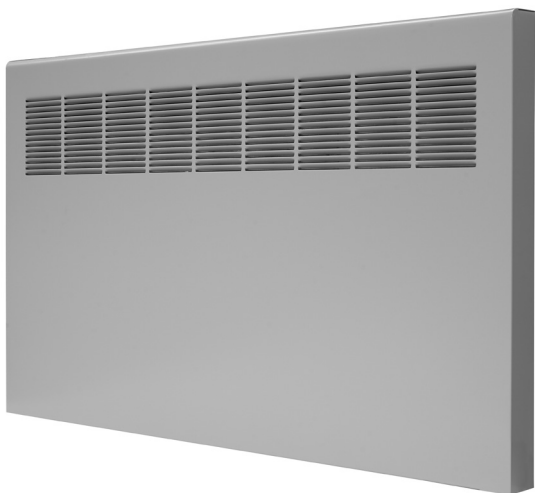
## **W-A**

**Type W-A:** The W-A Convector is a completely exposed wall hung unit with flat top. Outlet grille is in the face of the enclosure. Enclosure front wraps around unit and fastens to sides of cabinet with clips. Air inlet is through open bottom of unit enclosure. See page 17.



## **SR-A/SRG-A**

**Type SR-A Semi-Recessed:** Cabinet design is similar to FS-A model. Enclosure projects only 2 1/4" from wall. Complete unit includes enclosure, front panel with outlet grille and arched inlet opening heating element. Front panel is easily removed for cleaning or access to heating element. Unit may be provided with integral inlet grille, (SRG-A). See page 18.

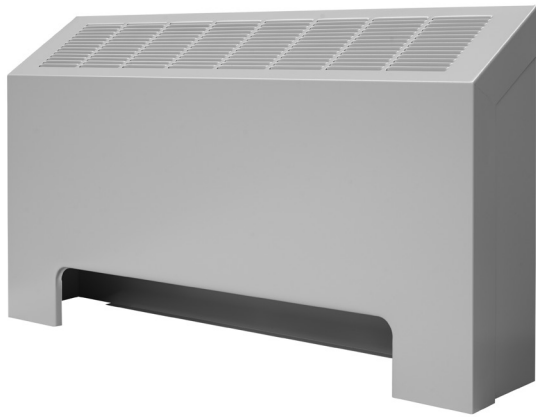


## **PW-A/PWG-A**

**Type PW-A:** This is a partially recessed unit with rounded flange front and venetian type air outlet grille, standard for wall mounting as illustrated. Cabinet extends only 2 1/4" from wall. Enclosure front fastens to brackets on unit liner installed in wall recess. Air inlet is through open bottom of unit (PW-A). Unit may be provided with integral inlet grille, (PWG-A). See page 19.

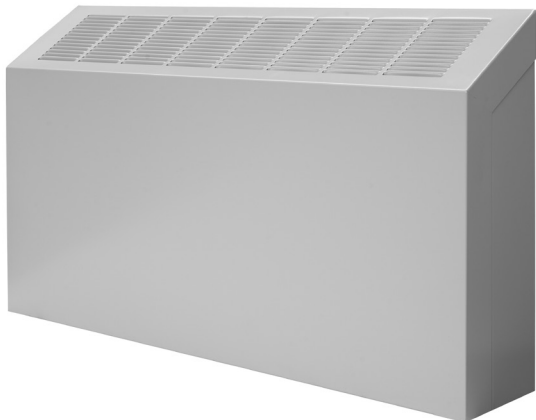


# Types of Convectors



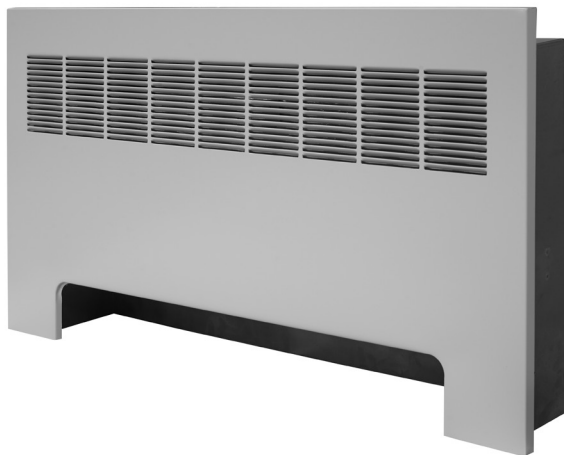
## **SF-A/SFG-A**

**Type SF-A:** The Type SF-A Free-Standing Cabinet Enclosure is designed to be used exposed and fitted flush against the wall. Readily installed without alteration of wall interior, the SF-A enclosure is frequently used for system modernization where it is desirable to avoid the expense of recessing the unit in the wall. Arched inlet shown is standard. Unit may be provided with integral inlet grille, (SFG-A). See page 20. (SFG-A available in stainless steel, consult factory).



## **SW-A**

**Type SW-A:** This model is fully exposed wall hung with outlet grille located in sloping top. Enclosure wraps around unit and fastens to sides with clips. Air inlet is through open bottom of unit. Slope of top is 30°. See page 17. Consult factory for availability with stainless steel.



## **RF-A/RFG-A AND FWG-A**

**Type RF-A:** Designed to be fully recessed within the wall. The flanged edge metal front contains the outlet grille and inlet opening and is fastened by screws. It is easily removable for heating element access. The standard unit is arranged for floor mounting with arched inlet opening, (RF-A).

Unit may be provided with integral inlet grille (RFG-A shown). See page 21.

**Type FWG-A** unit is similar, but for wall mounting with integral inlet grille. All units extend 13/16" from wall. See page 22. Consult factory for availability of FWG-A and RFG-A models in stainless steel.

# Convactor Steam Ratings

**TABLE 1**

**STEAM RATINGS IN EDR (215°F AT 65°F EAT)**

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPES FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	9.3	10.4	11.8	12.2	13.0	10.4	11.8	12.2	13.0	13.6
	24	11.5	13.1	15.1	15.5	16.6	13.1	15.1	15.5	16.6	17.3
	28	13.8	15.9	18.1	18.6	19.9	15.9	18.1	18.6	19.9	21.0
	32	16.1	18.7	21.3	21.9	23.6	18.7	21.3	21.9	23.6	24.8
	36	18.2	21.5	24.5	25.1	27.1	21.5	24.5	25.1	27.1	28.6
	40	20.4	24.2	27.5	28.3	30.5	24.2	27.5	28.3	30.5	32.2
	44	22.6	27.0	30.8	31.5	34.0	27.0	30.8	31.5	34.0	36.0
	48	24.8	29.6	33.8	34.8	37.4	29.6	33.8	34.8	37.4	39.7
	52	27.3	32.5	36.9	37.8	40.6	32.5	36.9	37.8	40.6	43.1
	56	29.3	35.2	40.1	41.1	44.3	35.2	40.1	41.1	44.3	47.1
60	31.9	38.0	43.1	44.2	47.5	38.0	43.1	44.2	47.5	50.5	
64	33.9	40.8	46.4	47.5	51.2	40.8	46.4	47.5	51.2	54.5	
6	20	13.5	15.1	17.7	18.3	20.2	15.1	17.7	18.3	20.2	21.0
	24	16.8	19.0	22.4	23.2	25.7	19.0	22.4	23.2	25.7	26.7
	28	20.2	23.0	27.0	27.8	30.7	23.0	27.0	27.8	30.7	31.9
	32	23.4	27.0	31.7	32.8	36.2	27.0	31.7	32.8	36.2	37.6
	36	26.8	30.8	36.2	37.6	41.4	30.8	36.2	37.6	41.4	43.1
	40	30.2	34.9	40.9	42.5	46.8	34.9	40.9	42.5	46.8	48.6
	44	33.6	38.7	45.5	47.3	52.0	38.7	45.5	47.3	52.0	54.1
	48	37.0	42.7	50.1	51.9	57.1	42.7	50.1	51.9	57.1	59.6
	52	40.6	46.6	54.6	56.4	62.1	46.6	54.6	56.4	62.1	64.6
	56	43.8	50.6	59.3	61.4	67.6	50.6	59.3	61.4	67.6	70.5
60	47.5	54.4	63.8	66.0	72.6	54.4	63.8	66.0	72.6	75.6	
64	50.8	58.5	68.5	71.1	78.2	58.5	68.5	71.1	78.2	81.6	
8	20	16.8	18.9	21.0	21.4	23.2	18.9	21.0	21.4	23.2	24.2
	24	21.3	24.0	26.5	27.4	29.6	24.0	26.5	27.4	29.6	31.1
	28	26.6	29.0	32.0	32.9	35.5	29.0	32.0	32.9	35.5	37.2
	32	31.5	34.1	37.6	38.8	41.9	34.1	37.6	38.8	41.9	44.0
	36	36.3	39.1	43.3	44.6	48.1	39.1	43.3	44.6	48.1	50.5
	40	41.1	44.3	49.0	50.3	54.4	44.3	49.0	50.3	54.4	56.9
	44	46.0	49.3	54.4	56.0	60.6	49.3	54.4	56.0	60.6	63.3
	48	49.8	53.9	60.0	61.7	67.0	53.9	60.0	61.7	67.0	70.0
	52	56.1	59.3	65.3	67.1	72.6	59.3	65.3	67.1	72.6	75.6
	56	60.9	64.6	71.2	73.2	79.2	64.6	71.2	73.2	79.2	82.7
60	65.7	69.4	76.4	78.5	84.9	69.4	76.4	78.5	84.9	88.4	
64	69.9	74.5	82.3	84.7	91.5	74.5	82.3	84.7	91.5	95.4	

**TABLE 1A**

**STEAM RATINGS IN BTU/H (215°F AT 65°F EAT)**

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPES FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2230	2495	2830	2930	3120	2495	2830	2930	3120	3265
	24	2760	3145	3625	3720	3985	3145	3625	3720	3985	4150
	28	3310	3815	4345	4465	4775	3815	4345	4465	4775	5040
	32	3865	4490	5110	5255	5665	4490	5110	5255	5665	5950
	36	4370	5160	5880	6025	6505	5160	5880	6025	6505	6865
	40	4895	5810	6600	6790	7320	5810	6600	6790	7320	7730
	44	5425	6480	7390	7560	8160	6480	7390	7560	8160	8640
	48	5950	7105	8110	8350	8975	7105	8110	8350	8975	9530
	52	6550	7800	8855	9070	9745	7800	8855	9070	9745	10345
	56	7030	8450	9625	9865	10630	8450	9625	9865	10630	11305
60	7655	9120	10345	10610	11400	9120	10345	10610	11400	12120	
64	8135	9790	11135	11400	12290	9790	11135	11400	12290	13080	
6	20	3240	3625	4250	4390	4850	3625	4250	4390	4850	5040
	24	4030	4560	5375	5570	6170	4560	5375	5570	6170	6410
	28	4850	5520	6480	6670	7370	5520	6480	6670	7370	7655
	32	5615	6480	7610	7870	8690	6480	7610	7870	8690	9025
	36	6430	7390	8690	9025	9935	7390	8690	9025	9935	10345
	40	7250	8375	9815	10200	11230	8375	9815	10200	11230	11665
	44	8065	9290	10920	11350	12480	9290	10920	11350	12480	12985
	48	8880	10250	12025	12455	13705	10250	12025	12455	13705	14305
	52	9745	11185	13105	13535	14905	11185	13105	13535	14905	15505
	56	10510	12145	14230	14735	16225	12145	14230	14735	16225	16920
60	11400	13055	15310	15840	17425	13055	15310	15840	17425	18145	
64	12190	14040	16440	17065	18770	14040	16440	17065	18770	19585	
8	20	4030	4535	5040	5135	5570	4535	5040	5135	5570	5810
	24	5110	5760	6360	6575	7105	5760	6360	6575	7105	7465
	28	6385	6960	7680	7895	8520	6960	7680	7895	8520	8930
	32	7560	8185	9025	9310	10055	8185	9025	9310	10055	10560
	36	8710	9385	10390	10705	11545	9385	10390	10705	11545	12120
	40	9865	10630	11760	12070	13055	10630	11760	12070	13055	13655
	44	11040	11830	13055	13440	14545	11830	13055	13440	14545	15190
	48	11950	12935	14400	14810	16080	12935	14400	14810	16080	16800
	52	13465	14230	15670	16105	17425	14230	15670	16105	17425	18145
	56	14615	15505	17090	17570	19010	15505	17090	17570	19010	19850
60	15770	16655	18335	18840	20375	16655	18335	18840	20375	21215	
64	16775	17880	19750	20330	21960	17880	19750	20330	21960	22895	

\* Derating factors for inlet grilles, see Table 7. For **FWG-A** units, use ratings for FS-A units and apply derate correction factors from table 7.

# Convector Steam Ratings

**TABLE 2**

**STEAM RATINGS IN EDR (215°F AT 65°F EAT)**

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	11.7	12.2	13.0	13.4	13.9	12.2	13.0	13.4	13.9	14.6
	24	15.0	15.5	16.5	17.0	17.7	15.5	16.5	17.0	17.7	18.4
	28	18.0	18.7	19.9	20.4	21.3	18.7	19.9	20.4	21.3	22.1
	32	21.3	22.1	23.5	24.0	25.2	22.1	23.5	24.0	25.2	26.2
	36	24.6	25.3	26.9	27.6	29.0	25.3	26.9	27.6	29.0	30.2
	40	27.7	28.5	30.5	31.3	32.7	28.5	30.5	31.3	32.7	33.8
	44	30.6	31.8	33.9	34.8	36.4	31.8	33.9	34.8	36.4	37.8
	48	33.9	35.0	37.4	38.3	40.1	35.0	37.4	38.3	40.1	41.6
	52	36.8	38.1	40.6	41.4	43.5	38.1	40.6	41.4	43.5	45.2
	56	40.1	41.4	44.4	45.2	47.5	41.4	44.4	45.2	47.5	49.3
60	42.7	44.6	47.5	48.4	50.8	44.6	47.5	48.4	50.8	53.4	
64	45.8	47.9	51.3	52.2	54.8	47.9	51.3	52.2	54.8	58.0	
6	20	18.2	18.8	20.7	21.2	22.6	18.8	20.7	21.2	22.6	23.7
	24	22.6	23.8	26.2	27.0	29.0	23.8	26.2	27.0	29.0	29.9
	28	27.2	28.7	31.5	32.3	34.7	28.7	31.5	32.3	34.7	36.2
	32	31.4	33.8	37.1	38.0	41.0	33.8	37.1	38.0	41.0	42.2
	36	37.1	38.7	42.4	43.7	46.9	38.7	42.4	43.7	46.9	48.4
	40	41.6	43.7	47.8	49.2	52.8	43.7	47.8	49.2	52.8	54.8
	44	46.6	48.6	53.3	54.6	59.0	48.6	53.3	54.6	59.0	61.1
	48	51.4	53.5	58.5	60.3	64.8	53.5	58.5	60.3	64.8	67.1
	52	56.4	58.4	63.7	65.5	70.4	58.4	63.7	65.5	70.4	73.3
	56	62.3	63.4	69.4	71.4	76.7	63.4	69.4	71.4	76.7	79.8
60	65.8	68.1	74.5	76.5	82.2	68.1	74.5	76.5	82.2	85.7	
64	70.2	73.2	80.3	82.4	88.6	73.2	80.3	82.4	88.6	92.0	
8	20	22.9	24.0	25.5	26.3	28.2	24.0	25.5	26.3	28.2	29.3
	24	30.0	30.6	32.6	33.5	36.1	30.6	32.6	33.5	36.1	37.5
	28	36.0	37.0	39.2	40.2	43.4	37.0	39.2	40.2	43.4	45.1
	32	42.6	43.5	46.4	47.5	51.3	43.5	46.4	47.5	51.3	53.3
	36	49.0	50.2	55.2	54.6	58.9	50.2	55.2	54.6	58.9	61.2
	40	55.0	56.5	60.1	61.8	66.6	56.5	60.1	61.8	66.6	69.1
	44	61.6	63.0	66.8	68.8	74.0	63.0	66.8	68.8	74.0	76.8
	48	68.0	69.5	73.8	74.6	81.7	69.5	73.8	74.6	81.7	84.9
	52	73.8	75.8	80.2	82.3	88.9	75.8	80.2	82.3	88.9	92.6
	56	80.7	82.3	87.5	89.8	96.9	82.3	87.5	89.8	96.9	100.9
60	86.4	88.7	93.8	96.3	104.0	88.7	93.8	96.3	104.0	108.5	
64	93.3	95.4	101.1	103.9	112.0	95.4	101.1	103.9	112.0	116.7	

**TABLE 2A**

**STEAM RATINGS IN BTU/H (215°F AT 65°F EAT)**

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2810	2930	3120	3215	3335	2930	3120	3215	3335	3505
	24	3600	3720	3960	4080	4250	3720	3960	4080	4250	4415
	28	4320	4490	4775	4895	5110	4490	4775	4895	5110	5305
	32	5110	5305	5640	5760	6050	5305	5640	5760	6050	6290
	36	5905	6070	6455	6625	6960	6070	6455	6625	6960	7250
	40	6650	6840	7320	7510	7850	6840	7320	7510	7850	8110
	44	7345	7630	8135	8350	8735	7630	8135	8350	8735	9070
	48	8135	8400	8975	9190	9625	8400	8975	9190	9625	9985
	52	8830	9145	9745	9935	10440	9145	9745	9935	10440	10850
	56	9625	9935	10655	10850	11400	9935	10655	10850	11400	11830
60	10250	10705	11400	11615	12190	10705	11400	11615	12190	12815	
64	10990	11495	12310	12530	13150	11495	12310	12530	13150	13920	
6	20	4370	4510	4970	5090	5425	4510	4970	5090	5425	5690
	24	5425	5710	6290	6480	6960	5710	6290	6480	6960	7175
	28	6530	6890	7560	7750	8330	6890	7560	7750	8330	8690
	32	7535	8110	8905	9120	9840	8110	8905	9120	9840	10130
	36	8905	9290	10175	10490	11255	9290	10175	10490	11255	11615
	40	9985	10490	11470	11810	12670	10490	11470	11810	12670	13150
	44	11185	11665	12790	13105	14160	11665	12790	13105	14160	14665
	48	12335	12840	14040	14470	15550	12840	14040	14470	15550	16105
	52	13535	14015	15290	15720	16895	14015	15290	15720	16895	17590
	56	14950	15215	16655	17135	18410	15215	16655	17135	18410	19150
60	15790	16345	17880	18360	19730	16345	17880	18360	19730	20570	
64	16850	17570	19270	19775	21265	17570	19270	19775	21265	22080	
8	20	5495	5760	6120	6310	6770	5760	6120	6310	6770	7030
	24	7200	7345	7825	8040	8665	7345	7825	8040	8665	9000
	28	8640	8880	9410	9650	10415	8880	9410	9650	10415	10825
	32	10225	10440	11135	11400	12310	10440	11135	11400	12310	12790
	36	11760	12050	13250	13105	14135	12050	13250	13105	14135	14690
	40	13200	13560	14425	14830	15985	13560	14425	14830	15985	16585
	44	14785	15120	16030	16510	17760	15120	16030	16510	17760	18430
	48	16320	16680	17710	17905	19610	16680	17710	17905	19610	20375
	52	17710	18190	19250	19750	21335	18190	19250	19750	21335	22225
	56	19370	19750	21000	21550	23255	19750	21000	21550	23255	24215
60	20735	21290	22510	23110	24960	21290	22510	23110	24960	26040	
64	22390	22895	24265	24935	26880	22895	24265	24935	26880	28010	

\* Derating factors for inlet grilles, see Table 7. For **FWG-A** units, use ratings for FS-A units and apply derate correction factors from table 7.

# Hot Water Capacities

## 210°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2120	2370	2690	2785	2965	2370	2690	2785	2965	3100
	24	2620	2990	3445	3535	3785	2990	3445	3535	3785	3945
	28	3145	3625	4130	4240	4535	3625	4130	4240	4535	4790
	32	3670	4265	4855	4990	5380	4265	4855	4990	5380	5655
	36	4150	4900	5585	5725	6180	4900	5585	5725	6180	6520
	40	4650	5520	6270	6450	6955	5520	6270	6450	6955	7345
	44	5155	6155	7020	7180	7750	6155	7020	7180	7750	8210
	48	5655	6750	7705	7935	8525	6750	7705	7935	8525	9055
	52	6225	7410	8410	8615	9260	7410	8410	8615	9260	9830
	56	6680	8030	9145	9370	10100	8030	9145	9370	10100	10740
60	7270	8665	9830	10080	10830	8665	9830	10080	10830	11515	
64	7730	9300	10580	10830	11675	9300	10580	10830	11675	12425	
6	20	3080	3445	4040	4170	4610	3445	4040	4170	4610	4790
	24	3830	4330	5105	5290	5860	4330	5105	5290	5860	6090
	28	4610	5245	6155	6335	7000	5245	6155	6335	7000	7270
	32	5335	6155	7230	7475	8255	6155	7230	7475	8255	8575
	36	6110	7020	8255	8575	9440	7020	8255	8575	9440	9830
	40	6890	7955	9325	9690	10670	7955	9325	9690	10670	11080
	44	7660	8825	10375	10785	11855	8825	10375	10785	11855	12335
	48	8435	9740	11425	11830	13020	9740	11425	11830	13020	13590
	52	9260	10625	12450	12860	14160	10625	12450	12860	14160	14730
	56	9985	11540	13520	14000	15415	11540	13520	14000	15415	16075
60	10830	12400	14545	15050	16555	12400	14545	15050	16555	17240	
64	11580	13340	15620	16210	17830	13340	15620	16210	17830	18605	
8	20	3830	4310	4790	4880	5290	4310	4790	4880	5290	5520
	24	4855	5470	6040	6245	6750	5470	6040	6245	6750	7090
	28	6065	6610	7295	7500	8095	6610	7295	7500	8095	8485
	32	7180	7775	8575	8845	9550	7775	8575	8845	9550	10030
	36	8275	8915	9870	10170	10970	8915	9870	10170	10970	11515
	40	9370	10100	11170	11465	12400	10100	11170	11465	12400	12970
	44	10490	11240	12400	12770	13820	11240	12400	12770	13820	14430
	48	11355	12290	13680	14070	15275	12290	13680	14070	15275	15960
	52	12790	13520	14885	15300	16555	13520	14885	15300	16555	17240
	56	13885	14730	16235	16690	18060	14730	16235	16690	18060	18860
60	14980	15820	17420	17900	19355	15820	17420	17900	19355	20155	
64	15935	16985	18765	19315	20860	16985	18765	19315	20860	21750	

## 210°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2670	2785	2965	3055	3170	2785	2965	3055	3170	3330
	24	3420	3535	3760	3875	4040	3535	3760	3875	4040	4195
	28	4105	4265	4535	4650	4855	4265	4535	4650	4855	5040
	32	4855	5040	5360	5470	5750	5040	5360	5470	5750	5975
	36	5610	5765	6130	6295	6610	5765	6130	6295	6610	6890
	40	6320	6500	6955	7135	7460	6500	6955	7135	7460	7705
	44	6980	7250	7730	7935	8300	7250	7730	7935	8300	8615
	48	7730	7980	8525	8730	9145	7980	8525	8730	9145	9485
	52	8390	8690	9260	9440	9920	8690	9260	9440	9920	10310
	56	9145	9440	10120	10310	10830	9440	10120	10310	10830	11240
60	9740	10170	10830	11035	11580	10170	10830	11035	11580	12175	
64	10440	10920	11695	11905	12495	10920	11695	11905	12495	13225	
6	20	4150	4285	4720	4835	5155	4285	4720	4835	5155	5405
	24	5155	5425	5975	6155	6610	5425	5975	6155	6610	6815
	28	6205	6545	7180	7365	7915	6545	7180	7365	7915	8255
	32	7160	7705	8460	8665	9350	7705	8460	8665	9350	9625
	36	8460	8825	9665	9965	10690	8825	9665	9965	10690	11035
	40	9485	9965	10895	11220	12035	9965	10895	11220	12035	12495
	44	10625	11080	12150	12450	13450	11080	12150	12450	13450	13930
	48	11720	12200	13340	13745	14775	12200	13340	13745	14775	15300
	52	12860	13315	14525	14935	16050	13315	14525	14935	16050	16710
	56	14205	14455	15820	16280	17490	14455	15820	16280	17490	18195
60	15000	15530	16985	17440	18745	15530	16985	17440	18745	19540	
64	16010	16690	18305	18785	20200	16690	18305	18785	20200	20975	
8	20	5220	5470	5815	5995	6430	5470	5815	5995	6430	6680
	24	6840	6980	7435	7640	8230	6980	7435	7640	8230	8550
	28	8210	8435	8940	9170	9895	8435	8940	9170	9895	10285
	32	9715	9920	10580	10830	11695	9920	10580	10830	11695	12150
	36	11170	11450	12590	12450	13430	11450	12590	12450	13430	13955
	40	12540	12880	13705	14090	15185	12880	13705	14090	15185	15755
	44	14045	14365	15230	15685	16870	14365	15230	15685	16870	17510
	48	15505	15845	16825	17010	18630	15845	16825	17010	18630	19355
	52	16825	17280	18290	18765	20270	17280	18290	18765	20270	21115
	56	18400	18765	19950	20475	22090	18765	19950	20475	22090	23005
60	19700	20225	21385	21955	23710	20225	21385	21955	23710	24740	
64	21270	21750	23050	23690	25535	21750	23050	23690	25535	26610	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.



# Hot Water Capacities

## 200°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1895	2120	2405	2490	2650	2120	2405	2490	2650	2775
	24	2345	2675	3080	3160	3385	2675	3080	3160	3385	3530
	28	2815	3245	3695	3795	4060	3245	3695	3795	4060	4285
	32	3285	3815	4345	4465	4815	3815	4345	4465	4815	5060
	36	3715	4385	5000	5120	5530	4385	5000	5120	5530	5835
	40	4160	4940	5610	5770	6220	4940	5610	5770	6220	6570
	44	4610	5510	6280	6425	6935	5510	6280	6425	6935	7345
	48	5060	6040	6895	7100	7630	6040	6895	7100	7630	8100
	52	5570	6630	7525	7710	8285	6630	7525	7710	8285	8795
	56	5975	7185	8180	8385	9035	7185	8180	8385	9035	9610
	60	6505	7750	8795	9020	9690	7750	8795	9020	9690	10300
64	6915	8320	9465	9690	10445	8320	9465	9690	10445	11120	
6	20	2755	3080	3615	3730	4125	3080	3615	3730	4125	4285
	24	3425	3875	4570	4735	5245	3875	4570	4735	5245	5450
	28	4125	4690	5510	5670	6265	4690	5510	5670	6265	6505
	32	4775	5510	6470	6690	7385	5510	6470	6690	7385	7670
	36	5465	6280	7385	7670	8445	6280	7385	7670	8445	8795
	40	6165	7120	8345	8670	9545	7120	8345	8670	9545	9915
	44	6855	7895	9280	9650	10610	7895	9280	9650	10610	11035
	48	7550	8715	10220	10585	11650	8715	10220	10585	11650	12160
	52	8285	9505	11140	11505	12670	9505	11140	11505	12670	13180
	56	8935	10325	12095	12525	13790	10325	12095	12525	13790	14380
	60	9690	11095	13015	13465	14810	11095	13015	13465	14810	15425
64	10360	11935	13975	14505	15955	11935	13975	14505	15955	16645	
8	20	3425	3855	4285	4365	4735	3855	4285	4365	4735	4940
	24	4345	4895	5405	5590	6040	4895	5405	5590	6040	6345
	28	5425	5915	6530	6710	7240	5915	6530	6710	7240	7590
	32	6425	6955	7670	7915	8545	6955	7670	7915	8545	8975
	36	7405	7975	8830	9100	9815	7975	8830	9100	9815	10300
	40	8385	9035	9995	10260	11095	9035	9995	10260	11095	11605
	44	9385	10055	11095	11425	12365	10055	11095	11425	12365	12910
	48	10160	10995	12240	12590	13670	10995	12240	12590	13670	14280
	52	11445	12095	13320	13690	14810	12095	13320	13690	14810	15425
	56	12425	13180	14525	14935	16160	13180	14525	14935	16160	16875
	60	13405	14155	15585	16015	17320	14155	15585	16015	17320	18035
64	14260	15200	16790	17280	18665	15200	16790	17280	18665	19460	

## 200°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2390	2490	2650	2735	2835	2490	2650	2735	2835	2980
	24	3060	3160	3365	3470	3615	3160	3365	3470	3615	3755
	28	3670	3815	4060	4160	4345	3815	4060	4160	4345	4510
	32	4345	4510	4795	4895	5145	4510	4795	4895	5145	5345
	36	5020	5160	5485	5630	5915	5160	5485	5630	5915	6165
	40	5655	5815	6220	6385	6675	5815	6220	6385	6675	6895
	44	6245	6485	6915	7100	7425	6485	6915	7100	7425	7710
	48	6915	7140	7630	7810	8180	7140	7630	7810	8180	8485
	52	7505	7775	8285	8445	8875	7775	8285	8445	8875	9225
	56	8180	8445	9055	9225	9690	8445	9055	9225	9690	10055
	60	8715	9100	9690	9875	10360	9100	9690	9875	10360	10895
64	9340	9770	10465	10650	11180	9770	10465	10650	11180	11830	
6	20	3715	3835	4225	4325	4610	3835	4225	4325	4610	4835
	24	4610	4855	5345	5510	5915	4855	5345	5510	5915	6100
	28	5550	5855	6425	6590	7080	5855	6425	6590	7080	7385
	32	6405	6895	7570	7750	8365	6895	7570	7750	8365	8610
	36	7570	7895	8650	8915	9565	7895	8650	8915	9565	9875
	40	8485	8915	9750	10040	10770	8915	9750	10040	10770	11180
	44	9505	9915	10870	11140	12035	9915	10870	11140	12035	12465
	48	10485	10915	11935	12300	13220	10915	11935	12300	13220	13690
	52	11505	11915	12995	13360	14360	11915	12995	13360	14360	14950
	56	12710	12935	14155	14565	15650	12935	14155	14565	15650	16280
	60	13420	13895	15200	15605	16770	13895	15200	15605	16770	17485
64	14325	14935	16380	16810	18075	14935	16380	16810	18075	18770	
8	20	4670	4895	5200	5365	5755	4895	5200	5365	5755	5975
	24	6120	6245	6650	6835	7365	6245	6650	6835	7365	7650
	28	7345	7550	8000	8205	8855	7550	8000	8205	8855	9200
	32	8690	8875	9465	9690	10465	8875	9465	9690	10465	10870
	36	9995	10245	11265	11440	12015	10245	11265	11440	12015	12485
	40	11220	11525	12260	12605	13585	11525	12260	12605	13585	14095
	44	12565	12850	13625	14035	15095	12850	13625	14035	15095	15665
	48	13870	14180	15055	15220	16670	14180	15055	15220	16670	17320
	52	15055	15460	16365	16790	18135	15460	16365	16790	18135	18890
	56	16465	16790	17850	18320	19765	16790	17850	18320	19765	20585
	60	17625	18095	19135	19645	21215	18095	19135	19645	21215	22135
64	19030	19460	20625	21195	22850	19460	20625	21195	22850	23810	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.

# Hot Water Capacities

## 190°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1695	1895	2150	2225	2370	1895	2150	2225	2370	2480
	24	2100	2390	2755	2825	3030	2390	2755	2825	3030	3155
	28	2515	2900	3300	3395	3630	2900	3300	3395	3630	3830
	32	2935	3410	3885	3995	4305	3410	3885	3995	4305	4520
	36	3320	3920	4470	4580	4945	3920	4470	4580	4945	5215
	40	3720	4415	5015	5160	5565	4415	5015	5160	5565	5875
	44	4125	4925	5615	5745	6200	4925	5615	5745	6200	6565
	48	4520	5400	6165	6345	6820	5400	6165	6345	6820	7245
	52	4980	5930	6730	6895	7405	5930	6730	6895	7405	7860
	56	5345	6420	7315	7495	8080	6420	7315	7495	8080	8590
60	5820	6930	7860	8065	8665	6930	7860	8065	8665	9210	
64	6185	7440	8465	8665	9340	7440	8465	8665	9340	9940	
6	20	2460	2755	3230	3335	3685	2755	3230	3335	3685	3830
	24	3065	3465	4085	4235	4690	3465	4085	4235	4690	4870
	28	3685	4195	4925	5070	5600	4195	4925	5070	5600	5820
	32	4265	4925	5785	5980	6605	4925	5785	5980	6605	6860
	36	4885	5615	6605	6860	7550	5615	6605	6860	7550	7860
	40	5510	6365	7460	7750	8535	6365	7460	7750	8535	8865
	44	6130	7060	8300	8625	9485	7060	8300	8625	9485	9870
	48	6750	7790	9140	9465	10415	7790	9140	9465	10415	10870
	52	7405	8500	9960	10285	11330	8500	9960	10285	11330	11785
	56	7990	9230	10815	11200	12330	9230	10815	11200	12330	12860
60	8665	9920	11635	12040	13245	9920	11635	12040	13245	13790	
64	9265	10670	12495	12970	14265	10670	12495	12970	14265	14885	
8	20	3065	3445	3830	3905	4235	3445	3830	3905	4235	4415
	24	3885	4380	4835	4995	5400	4380	4835	4995	5400	5675
	28	4855	5290	5835	6000	6475	5290	5835	6000	6475	6785
	32	5745	6220	6860	7075	7640	6220	6860	7075	7640	8025
	36	6620	7135	7895	8135	8775	7135	7895	8135	8775	9210
	40	7495	8080	8940	9175	9920	8080	8940	9175	9920	10380
	44	8390	8990	9920	10215	11055	8990	9920	10215	11055	11545
	48	9080	9830	10945	11255	12220	9830	10945	11255	12220	12770
	52	10235	10815	11910	12240	13245	10815	11910	12240	13245	13790
	56	11105	11785	12990	13355	14450	11785	12990	13355	14450	15085
60	11985	12660	13935	14320	15485	12660	13935	14320	15485	16125	
64	12750	13590	15010	15450	16690	13590	15010	15450	16690	17400	

## 190°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	2135	2225	2370	2445	2535	2225	2370	2445	2535	2665
	24	2735	2825	3010	3100	3230	2825	3010	3100	3230	3355
	28	3285	3410	3630	3720	3885	3410	3630	3720	3885	4030
	32	3885	4030	4285	4380	4600	4030	4285	4380	4600	4780
	36	4490	4615	4905	5035	5290	4615	4905	5035	5290	5510
	40	5055	5200	5565	5710	5965	5200	5565	5710	5965	6165
	44	5580	5800	6185	6345	6640	5800	6185	6345	6640	6895
	48	6185	6385	6820	6985	7315	6385	6820	6985	7315	7590
	52	6710	6950	7405	7550	7935	6950	7405	7550	7935	8245
	56	7315	7550	8100	8245	8665	7550	8100	8245	8665	8990
60	7790	8135	8665	8825	9265	8135	8665	8825	9265	9740	
64	8350	8735	9355	9525	9995	8735	9355	9525	9995	10580	
6	20	3320	3430	3775	3870	4125	3430	3775	3870	4125	4325
	24	4125	4340	4780	4925	5290	4340	4780	4925	5290	5455
	28	4965	5235	5745	5890	6330	5235	5745	5890	6330	6605
	32	5725	6165	6770	6930	7480	6165	6770	6930	7480	7700
	36	6770	7060	7735	7970	8555	7060	7735	7970	8555	8825
	40	7590	7970	8715	8975	9630	7970	8715	8975	9630	9995
	44	8500	8865	9720	9960	10760	8865	9720	9960	10760	11145
	48	9375	9760	10670	10995	11820	9760	10670	10995	11820	12240
	52	10285	10650	11620	11945	12840	10650	11620	11945	12840	13370
	56	11360	11565	12660	13025	13990	11565	12660	13025	13990	14555
60	12000	12420	13590	13955	14995	12420	13590	13955	14995	15635	
64	12805	13355	14645	15030	16160	13355	14645	15030	16160	16780	
8	20	4175	4380	4650	4795	5145	4380	4650	4795	5145	5345
	24	5470	5580	5945	6110	6585	5580	5945	6110	6585	6840
	28	6565	6750	7150	7335	7915	6750	7150	7335	7915	8225
	32	7770	7935	8465	8665	9355	7935	8465	8665	9355	9720
	36	8940	9160	10070	9960	10745	9160	10070	9960	10745	11165
	40	10030	10305	10965	11270	12150	10305	10965	11270	12150	12605
	44	11235	11490	12185	12550	13500	11490	12185	12550	13500	14005
	48	12405	12675	13460	13610	14905	12675	13460	13610	14905	15485
	52	13460	13825	14630	15010	16215	13825	14630	15010	16215	16890
	56	14720	15010	15960	16380	17675	15010	15960	16380	17675	18405
60	15760	16180	17110	17565	18970	16180	17110	17565	18970	19790	
64	17015	17400	18440	18950	20430	17400	18440	18950	20430	21290	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.

# Hot Water Capacities

## 180°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1495	1670	1895	1965	2090	1670	1895	1965	2090	2190
	24	1850	2105	2430	2490	2670	2105	2430	2490	2670	2780
	28	2220	2555	2910	2990	3200	2555	2910	2990	3200	3375
	32	2590	3010	3425	3520	3795	3010	3425	3520	3795	3985
	36	2930	3455	3940	4035	4360	3455	3940	4035	4360	4600
	40	3280	3895	4420	4550	4905	3895	4420	4550	4905	5180
	44	3635	4340	4950	5065	5465	4340	4950	5065	5465	5790
	48	3985	4760	5435	5595	6015	4760	5435	5595	6015	6385
	52	4390	5225	5935	6075	6530	5225	5935	6075	6530	6930
	56	4710	5660	6450	6610	7120	5660	6450	6610	7120	7575
60	5130	6110	6930	7110	7640	6110	6930	7110	7640	8120	
64	5450	6560	7460	7640	8235	6560	7460	7640	8235	8765	
6	20	2170	2430	2850	2940	3250	2430	2850	2940	3250	3375
	24	2700	3055	3600	3730	4135	3055	3600	3730	4135	4295
	28	3250	3700	4340	4470	4940	3700	4340	4470	4940	5130
	32	3760	4340	5100	5275	5820	4340	5100	5275	5820	6045
	36	4310	4950	5820	6045	6655	4950	5820	6045	6655	6930
	40	4860	5610	6575	6835	7525	5610	6575	6835	7525	7815
	44	5405	6225	7315	7605	8360	6225	7315	7605	8360	8700
	48	5950	6870	8055	8345	9180	6870	8055	8345	9180	9585
	52	6530	7495	8780	9070	9985	7495	8780	9070	9985	10390
	56	7040	8135	9535	9870	10870	8135	9535	9870	10870	11335
60	7640	8745	10260	10615	11675	8745	10260	10615	11675	12155	
64	8165	9405	11015	11435	12575	9405	11015	11435	12575	13120	
8	20	2700	3040	3375	3440	3730	3040	3375	3440	3730	3895
	24	3425	3860	4260	4405	4760	3860	4260	4405	4760	5000
	28	4280	4665	5145	5290	5710	4665	5145	5290	5710	5985
	32	5065	5485	6045	6240	6735	5485	6045	6240	6735	7075
	36	5835	6290	6960	7170	7735	6290	6960	7170	7735	8120
	40	6610	7120	7880	8085	8745	7120	7880	8085	8745	9150
	44	7395	7925	8745	9005	9745	7925	8745	9005	9745	10175
	48	8005	8665	9650	9925	10775	8665	9650	9925	10775	11255
	52	9020	9535	10500	10790	11675	9535	10500	10790	11675	12155
	56	9790	10390	11450	11770	12735	10390	11450	11770	12735	13300
60	10565	11160	12285	12625	13650	11160	12285	12625	13650	14215	
64	11240	11980	13235	13620	14715	11980	13235	13620	14715	15340	

## 180°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1885	1965	2090	2155	2235	1965	2090	2155	2235	2350
	24	2410	2490	2655	2735	2850	2490	2655	2735	2850	2960
	28	2895	3010	3200	3280	3425	3010	3200	3280	3425	3555
	32	3425	3555	3780	3860	4055	3555	3780	3860	4055	4215
	36	3955	4065	4325	4440	4665	4065	4325	4440	4665	4860
	40	4455	4585	4905	5030	5260	4585	4905	5030	5260	5435
	44	4920	5110	5450	5595	5850	5110	5450	5595	5850	6075
	48	5450	5630	6015	6155	6450	5630	6015	6155	6450	6690
	52	5915	6125	6530	6655	6995	6125	6530	6655	6995	7270
	56	6450	6655	7140	7270	7640	6655	7140	7270	7640	7925
60	6870	7170	7640	7780	8165	7170	7640	7780	8165	8585	
64	7365	7700	8250	8395	8810	7700	8250	8395	8810	9325	
6	20	2930	3020	3330	3410	3635	3020	3330	3410	3635	3810
	24	3635	3825	4215	4340	4665	3825	4215	4340	4665	4805
	28	4375	4615	5065	5195	5580	4615	5065	5195	5580	5820
	32	5050	5435	5965	6110	6595	5435	5965	6110	6595	6785
	36	5965	6225	6815	7030	7540	6225	6815	7030	7540	7780
	40	6690	7030	7685	7915	8490	7030	7685	7915	8490	8810
	44	7495	7815	8570	8780	9485	7815	8570	8780	9485	9825
	48	8265	8605	9405	9695	10420	8605	9405	9695	10420	10790
	52	9070	9390	10245	10530	11320	9390	10245	10530	11320	11785
	56	10015	10195	11160	11480	12335	10195	11160	11480	12335	12830
60	10580	10950	11980	12300	13220	10950	11980	12300	13220	13780	
64	11290	11770	12910	13250	14250	11770	12910	13250	14250	14795	
8	20	3680	3860	4100	4230	4535	3860	4100	4230	4535	4710
	24	4825	4920	5245	5385	5805	4920	5245	5385	5805	6030
	28	5790	5950	6305	6465	6980	5950	6305	6465	6980	7255
	32	6850	6995	7460	7640	8250	6995	7460	7640	8250	8570
	36	7880	8075	8880	8780	9470	8075	8880	8780	9470	9840
	40	8845	9085	9665	9935	10710	9085	9665	9935	10710	11110
	44	9905	10130	10740	11060	11900	10130	10740	11060	11900	12350
	48	10935	11175	11865	11995	13140	11175	11865	11995	13140	13650
	52	11865	12185	12900	13235	14295	12185	12900	13235	14295	14890
	56	12980	13235	14070	14440	15580	13235	14070	14440	15580	16225
60	13890	14265	15080	15485	16725	14265	15080	15485	16725	17445	
64	15000	15340	16260	16705	18010	15340	16260	16705	18010	18765	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.

# Hot Water Capacities

## 170°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1295	1445	1640	1700	1810	1445	1640	1700	1810	1895
	24	1600	1825	2105	2160	2310	1825	2105	2160	2310	2405
	28	1920	2215	2520	2590	2770	2215	2520	2590	2770	2925
	32	2240	2605	2965	3050	3285	2605	2965	3050	3285	3450
	36	2535	2995	3410	3495	3775	2995	3410	3495	3775	3980
	40	2840	3370	3830	3940	4245	3370	3830	3940	4245	4485
	44	3145	3760	4285	4385	4735	3760	4285	4385	4735	5010
	48	3450	4120	4705	4845	5205	4120	4705	4845	5205	5525
	52	3800	4525	5135	5260	5650	4525	5135	5260	5650	6000
	56	4075	4900	5585	5720	6165	4900	5585	5720	6165	6555
60	4440	5290	6000	6155	6610	5290	6000	6155	6610	7030	
64	4720	5680	6460	6610	7130	5680	6460	6610	7130	7585	
6	20	1880	2105	2465	2545	2815	2105	2465	2545	2815	2925
	24	2335	2645	3120	3230	3580	2645	3120	3230	3580	3720
	28	2815	3200	3760	3870	4275	3200	3760	3870	4275	4440
	32	3255	3760	4415	4565	5040	3760	4415	4565	5040	5235
	36	3730	4285	5040	5235	5760	4285	5040	5235	5760	6000
	40	4205	4860	5695	5915	6515	4860	5695	5915	6515	6765
	44	4680	5390	6335	6585	7240	5390	6335	6585	7240	7530
	48	5150	5945	6975	7225	7950	5945	6975	7225	7950	8295
	52	5650	6485	7600	7850	8645	6485	7600	7850	8645	8995
	56	6095	7045	8255	8545	9410	7045	8255	8545	9410	9815
60	6610	7570	8880	9185	10105	7570	8880	9185	10105	10525	
64	7070	8145	9535	9900	10885	8145	9535	9900	10885	11360	
8	20	2335	2630	2925	2980	3230	2630	2925	2980	3230	3370
	24	2965	3340	3690	3815	4120	3340	3690	3815	4120	4330
	28	3705	4035	4455	4580	4940	4035	4455	4580	4940	5180
	32	4385	4745	5235	5400	5830	4745	5235	5400	5830	6125
	36	5050	5445	6025	6210	6695	5445	6025	6210	6695	7030
	40	5720	6165	6820	7000	7570	6165	6820	7000	7570	7920
	44	6405	6860	7570	7795	8435	6860	7570	7795	8435	8810
	48	6930	7500	8350	8590	9325	7500	8350	8590	9325	9745
	52	7810	8255	9090	9340	10105	8255	9090	9340	10105	10525
	56	8475	8995	9910	10190	11025	8995	9910	10190	11025	11515
60	9145	9660	10635	10925	11820	9660	10635	10925	11820	12305	
64	9730	10370	11455	11790	12735	10370	11455	11790	12735	13280	

## 170°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1630	1700	1810	1865	1935	1700	1810	1865	1935	2035
	24	2090	2160	2295	2365	2465	2160	2295	2365	2465	2560
	28	2505	2605	2770	2840	2965	2605	2770	2840	2965	3075
	32	2965	3075	3270	3340	3510	3075	3270	3340	3510	3650
	36	3425	3520	3745	3840	4035	3520	3745	3840	4035	4205
	40	3855	3965	4245	4355	4555	3965	4245	4355	4555	4705
	44	4260	4425	4720	4845	5065	4425	4720	4845	5065	5260
	48	4720	4870	5205	5330	5585	4870	5205	5330	5585	5790
	52	5120	5305	5650	5760	6055	5305	5650	5760	6055	6295
	56	5585	5760	6180	6295	6610	5760	6180	6295	6610	6860
60	5945	6210	6610	6735	7070	6210	6610	6735	7070	7435	
64	6375	6665	7140	7265	7625	6665	7140	7265	7625	8075	
6	20	2535	2615	2885	2950	3145	2615	2885	2950	3145	3300
	24	3145	3310	3650	3760	4035	3310	3650	3760	4035	4160
	28	3785	3995	4385	4495	4830	3995	4385	4495	4830	5040
	32	4370	4705	5165	5290	5705	4705	5165	5290	5705	5875
	36	5165	5390	5900	6085	6530	5390	5900	6085	6530	6735
	40	5790	6085	6655	6850	7350	6085	6655	6850	7350	7625
	44	6485	6765	7420	7600	8215	6765	7420	7600	8215	8505
	48	7155	7445	8145	8395	9020	7445	8145	8395	9020	9340
	52	7850	8130	8870	9120	9800	8130	8870	9120	9800	10200
	56	8670	8825	9660	9940	10680	8825	9660	9940	10680	11105
60	9160	9480	10370	10650	11445	9480	10370	10650	11445	11930	
64	9775	10190	11175	11470	12335	10190	11175	11470	12335	12805	
8	20	3185	3340	3550	3660	3925	3340	3550	3660	3925	4075
	24	4175	4260	4540	4665	5025	4260	4540	4665	5025	5220
	28	5010	5150	5460	5595	6040	5150	5460	5595	6040	6280
	32	5930	6055	6460	6610	7140	6055	6460	6610	7140	7420
	36	6820	6990	7685	7800	8200	6990	7685	7800	8200	8520
	40	7655	7865	8365	8600	9270	7865	8365	8600	9270	9620
	44	8575	8770	9295	9575	10300	8770	9295	9575	10300	10690
	48	9465	9675	10270	10385	11375	9675	10270	10385	11375	11820
	52	10270	10550	11165	11455	12375	10550	11165	11455	12375	12890
	56	11235	11455	12180	12500	13490	11455	12180	12500	13490	14045
60	12025	12350	13055	13405	14475	12350	13055	13405	14475	15105	
64	12985	13280	14075	14460	15590	13280	14075	14460	15590	16245	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.

# Hot Water Capacities

## 160°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	FRONT OUTLET, NOMINAL LINER HEIGHT					FRONT OUTLET, WALL MOUNTED, NOMINAL HEIGHT				
		*TYPE FS-A, SR-A, RF-A, PW-A					TYPE W-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1135	1270	1445	1495	1590	1270	1445	1495	1590	1665
	24	1410	1605	1850	1895	2030	1605	1850	1895	2030	2115
	28	1690	1945	2215	2275	2435	1945	2215	2275	2435	2570
	32	1970	2290	2605	2680	2890	2290	2605	2680	2890	3035
	36	2230	2630	3000	3075	3320	2630	3000	3075	3320	3500
	40	2495	2965	3365	3465	3735	2965	3365	3465	3735	3940
	44	2765	3305	3770	3855	4160	3305	3770	3855	4160	4405
	48	3035	3625	4135	4260	4575	3625	4135	4260	4575	4860
	52	3340	3980	4515	4625	4970	3980	4515	4625	4970	5275
	56	3585	4310	4910	5030	5420	4310	4910	5030	5420	5765
60	3905	4650	5275	5410	5815	4650	5275	5410	5815	6180	
64	4150	4995	5680	5815	6270	4995	5680	5815	6270	6670	
6	20	1650	1850	2170	2240	2475	1850	2170	2240	2475	2570
	24	2055	2325	2740	2840	3145	2325	2740	2840	3145	3270
	28	2475	2815	3305	3400	3760	2815	3305	3400	3760	3905
	32	2865	3305	3880	4015	4430	3305	3880	4015	4430	4605
	36	3280	3770	4430	4605	5065	3770	4430	4605	5065	5275
	40	3700	4270	5005	5200	5725	4270	5005	5200	5725	5950
	44	4115	4740	5570	5790	6365	4740	5570	5790	6365	6620
	48	4530	5230	6135	6350	6990	5230	6135	6350	6990	7295
	52	4970	5705	6685	6905	7600	5705	6685	6905	7600	7910
	56	5360	6195	7255	7515	8275	6195	7255	7515	8275	8630
60	5815	6660	7810	8080	8885	6660	7810	8080	8885	9255	
64	6215	7160	8385	8705	9575	7160	8385	8705	9575	9990	
8	20	2055	2315	2570	2620	2840	2315	2570	2620	2840	2965
	24	2605	2940	3245	3355	3625	2940	3245	3355	3625	3805
	28	3255	3550	3915	4025	4345	3550	3915	4025	4345	4555
	32	3855	4175	4605	4750	5130	4175	4605	4750	5130	5385
	36	4440	4785	5300	5460	5890	4785	5300	5460	5890	6180
	40	5030	5420	6000	6155	6660	5420	6000	6155	6660	6965
	44	5630	6035	6660	6855	7420	6035	6660	6855	7420	7745
	48	6095	6595	7345	7555	8200	6595	7345	7555	8200	8570
	52	6865	7255	7990	8215	8885	7255	7990	8215	8885	9255
	56	7455	7910	8715	8960	9695	7910	8715	8960	9695	10125
60	8045	8495	9350	9610	10390	8495	9350	9610	10390	10820	
64	8555	9120	10075	10370	11200	9120	10075	10370	11200	11675	

## 160°F AVERAGE WATER TEMP (65°F ENTERING AIR TEMP)

DEPTH IN INCHES	LENGTH IN INCHES	SLOPE TOP, FREE STANDING, NOMINAL HEIGHT					SLOPE TOP, WALL MOUNTED, NOMINAL HEIGHT				
		TYPE SF-A					TYPE SW-A				
		18"	20"	24"	26"	32"	14"	18"	20"	26"	32"
4	20	1435	1495	1590	1640	1700	1495	1590	1640	1700	1790
	24	1835	1895	2020	2080	2170	1895	2020	2080	2170	2250
	28	2205	2290	2435	2495	2605	2290	2435	2495	2605	2705
	32	2605	2705	2875	2940	3085	2705	2875	2940	3085	3210
	36	3010	3095	3290	3380	3550	3095	3290	3380	3550	3700
	40	3390	3490	3735	3830	4005	3490	3735	3830	4005	4135
	44	3745	3890	4150	4260	4455	3890	4150	4260	4455	4625
	48	4150	4285	4575	4685	4910	4285	4575	4685	4910	5090
	52	4505	4665	4970	5065	5325	4665	4970	5065	5325	5535
	56	4910	5065	5435	5535	5815	5065	5435	5535	5815	6035
60	5230	5460	5815	5925	6215	5460	5815	5925	6215	6535	
64	5605	5860	6280	6390	6705	5860	6280	6390	6705	7100	
6	20	2230	2300	2535	2595	2765	2300	2535	2595	2765	2900
	24	2765	2910	3210	3305	3550	2910	3210	3305	3550	3660
	28	3330	3515	3855	3955	4250	3515	3855	3955	4250	4430
	32	3845	4135	4540	4650	5020	4135	4540	4650	5020	5165
	36	4540	4740	5190	5350	5740	4740	5190	5350	5740	5925
	40	5090	5350	5850	6025	6460	5350	5850	6025	6460	6705
	44	5705	5950	6525	6685	7220	5950	6525	6685	7220	7480
	48	6290	6550	7160	7380	7930	6550	7160	7380	7930	8215
	52	6905	7150	7800	8015	8615	7150	7800	8015	8615	8970
	56	7625	7760	8495	8740	9390	7760	8495	8740	9390	9765
60	8055	8335	9120	9365	10060	8335	9120	9365	10060	10490	
64	8595	8960	9830	10085	10845	8960	9830	10085	10845	11260	
8	20	2800	2940	3120	3220	3455	2940	3120	3220	3455	3585
	24	3670	3745	3990	4100	4420	3745	3990	4100	4420	4590
	28	4405	4530	4800	4920	5310	4530	4800	4920	5310	5520
	32	5215	5325	5680	5815	6280	5325	5680	5815	6280	6525
	36	6000	6145	6760	6885	7210	6145	6760	6885	7210	7490
	40	6730	6915	7355	7565	8150	6915	7355	7565	8150	8460
	44	7540	7710	8175	8420	9060	7710	8175	8420	9060	9400
	48	8325	8505	9030	9130	10000	8505	9030	9130	10000	10390
	52	9030	9275	9820	10075	10880	9275	9820	10075	10880	11335
	56	9880	10075	10710	10990	11860	10075	10710	10990	11860	12350
60	10575	10860	11480	11785	12730	10860	11480	11785	12730	13280	
64	11420	11675	12375	12715	13710	11675	12375	12715	13710	14285	

Capacities in BTU.

Derating factors for inlet grilles, see Table 7.

\* For FWG-A units, use ratings for FS-A units and apply derate correction factor from Table 7.



# Miscellaneous Capacity and Selection Data

## Selection

1. Determine the conditions of the system. (If hot water, the average temperature, temp. drop, etc.)
2. Determine the MBH capacity of the unit as required for each location as shown on plans or based on heat loss calculations.
3. Refer to the hot water capacity tables on page 8 thru 13 which list capacities at the conditions for the job, for the model convector required.
4. Locate in table the required capacity and read convector size from columns showing Depth, Length, Height.
5. To calculate ratings for temperatures not listed, use correction factors from Table 3 for desired AWT and multiply by 215°F rating.

**Table 4**

CORRECTION FACTORS FOR STEAM PRESSURES OTHER THAN 1 PSI GAUGE*						
FACTOR	PRESSURE PSI GAUGE					
	5	10	15	20	25	50
BTU PER SQ. FT.	269	301	327	351	374	463

\*Apply factor to Tables 1, 1A, 2 and 2A (pages 6 & 7) to obtain rating at other than 1 psi gauge.

Note: Max Recommended operating pressure 150 PSIG, (365.9°F).

For conversion from steam to hot water, use table factors as multiplier rather than a divisor.

**Table 5**

CORRECTION FACTORS FOR ACCESS DOORS								
Length	Free Standing, Non-Recessed Non-Standard Access Door Locations				Semi-Recessed or Fully Recessed Non-Standard Access Door Locations			
	3 or 4	3 & 4	5 or 6	5 & 6	3 or 4	3 & 4	5 or 6	5 & 6
20"	0.940	0.880	0.820	0.650	0.975	0.950	0.925	0.850
24"	0.950	0.910	0.860	0.720	0.980	0.960	0.940	0.880
28"	0.960	0.920	0.890	0.770	0.982	0.968	0.948	0.902
32"	0.970	0.940	0.890	0.800	0.985	0.972	0.955	0.918
36"	0.970	0.940	0.920	0.830	0.988	0.975	0.962	0.925
40"	0.970	0.950	0.920	0.850	0.990	0.978	0.970	0.932
44"	0.980	0.950	0.930	0.860	0.990	0.980	0.970	0.940
48"	0.980	0.960	0.940	0.880	0.990	0.982	0.970	0.948
52"	0.980	0.960	0.950	0.890	0.992	0.985	0.978	0.955
56"	0.980	0.960	0.950	0.890	0.992	0.985	0.978	0.955
60"	0.980	0.970	0.950	0.900	0.992	0.985	0.978	0.955
64"	0.980	0.970	0.950	0.910	0.992	0.988	0.978	0.962

**Table 6**

WATER FLOW IN GPM	PRESSURE LOSS IN FEET OF WATER		
	4 INCH MODELS	6 INCH MODELS	8 INCH MODELS
.25	0.044	—	—
.50	0.160	0.070	0.046
1	0.597	0.270	0.167
2	2.220	1.047	0.616
3	—	2.260	1.367
4	—	3.793	2.380
5	—	—	3.673

Charted figures showing pressure drop through Convectors with forced hot water. Used for determining pressure head requirement. Based on 64" length units, but applicable to shorter units, as most loss is due to headers.

**Table 3**

CONVECTOR CORRECTION FACTORS Based on Section 35.4 ASHRAE HVAC Systems and Equipment					
AVERAGE WATER TEMPERATURE (°F)	ENTERING AIR TEMPERATURE (°F)				
	55°	60°	(STD) 65°	70°	75°
100°	0.17	0.14	0.12	0.09	0.07
110°	0.23	0.20	0.17	0.14	0.12
120°	0.29	0.26	0.23	0.20	0.17
130°	0.35	0.32	0.29	0.26	0.23
140°	0.43	0.39	0.35	0.32	0.29
150°	0.50	0.46	0.43	0.39	0.35
160°	0.58	0.54	0.51	0.47	0.43
170°	0.67	0.63	0.58	0.54	0.51
180°	0.76	0.71	0.67	0.63	0.58
190°	0.85	0.81	0.76	0.71	0.67
200°	0.95	0.90	0.85	0.81	0.76
210°	1.05	1.00	0.95	0.90	0.85
215° (STD)	1.10	1.05	1.00	0.95	0.90
220°	1.15	1.10	1.05	1.00	0.95
230°	1.26	1.20	1.15	1.10	1.05
240°	1.37	1.32	1.26	1.21	1.15
250°	1.47	1.43	1.37	1.32	1.27

**Table 7**

CORRECTION FACTORS FOR INLET GRILLES TYPES: FSG-A, SRG-A, RFG-A, FWG-A, PWG-A, SFG-A			
DEPTH	HEIGHT		
	16", 18", 20"	22", 24", 26"	28", 30", 32"
4"	0.97	0.98	0.99
6"	0.94	0.95	0.98
8"	0.91	0.93	0.97

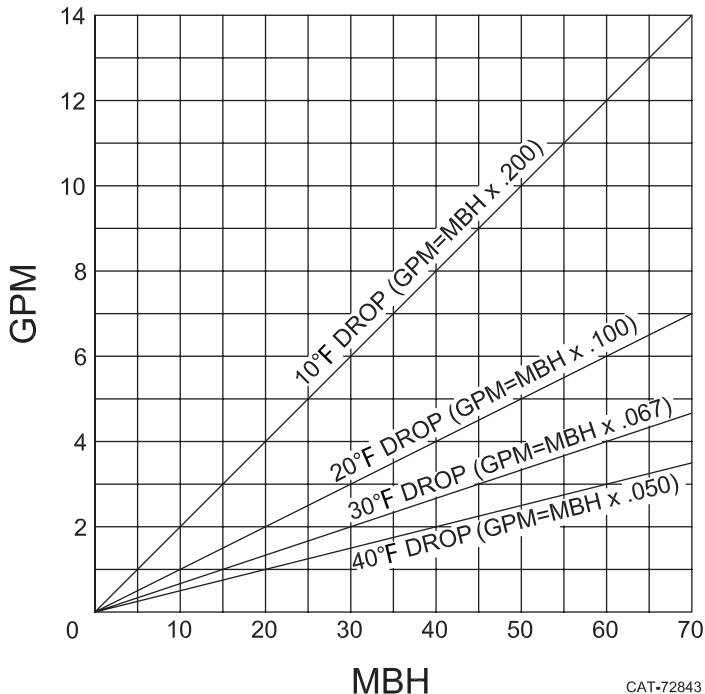
Due to the restriction to air flow, the percentages should be subtracted from the BTU output when inlet grilles are specified.

**REFER TO PAGE 23 FOR ELEMENT & PIPING INFORMATION**

# Miscellaneous Capacity and Selection Data

## GALLONS PER MINUTE OF HOT WATER REQUIRED

**Table 8**



The chart above may be used to determine the approximate GPM required for the desired MBH with various water temperature drops.

Formulas shown in chart with temperature drops may also be used for determining GPM.

EXAMPLE:  $\left\{ \begin{array}{ll} \text{MBH} & 15 \\ \text{Temperature drop} & 10^\circ\text{F} \\ \text{Factor from formula} & .200 \end{array} \right.$   
 $15 \times .200 = 3.0 \text{ GPM}$

Where systems are designed for low flow rates (velocity) it has been determined by ASHRAE and the Hydronics Institute (I.B.R.) that a minimum flow rate of .25 F.P.S. should be observed. No formal test information is available for performance below the .25 F.P.S. at this point in time.

REF:

$$\begin{aligned} \text{BTU} &= \text{GPM} \times 500 \times \text{TD} \\ \text{GPM} &= (\text{BTU} \div 500) \div \text{TD} \\ \text{TD} &= (\text{BTU} \div 500) \div \text{GPM} \end{aligned}$$

### CORRECTIONS WHEN USING GLYCOL SOLUTION IN SYSTEM

		<b>Propylene Glycol</b>
1. Heat transfer @ 180°F, with no increase in flow rate	20% solution	.982*
	30% solution	.961*
	40% solution	.934*
	50% solution	.902*
2. GPM req'd @ 180°F, (no correction to pump curve)	20° Δt	110%*
3. Pump head req'd @ 180°F, with increase in GPM		123%*
4. Freezing Point	50% by volume	-37°F
	40%	-14°F
	30%	+ 2°F
	20%	+15°F

\*Compared To Water.

## OUTPUT-FLOW RATE CORRECTIONS

**Table 9**

Convactor Depth	Tubes per Element	Minimum Flow Rate	MBH Based on TD & Minimum Flow Rate			
		(0.25 Ft./Sec.) GPM	10TD	20TD	30TD	40TD
4	2	.15	0.750	1.500	2.250	3.000
6	3	.225	1.125	2.250	3.375	4.500
8	4	.30	1.500	3.000	4.500	6.000

**Note:** Table 9 shows MBH which result at specific water temperature drops and minimum water flow rates which are required to maintain turbulent flow within element tubes. If the MBH output rating capacities shown on pages 6 to 13 fall below those shown in Table 9 for minimum flow rates, this indicates that the GPM required at a 20°F Water Temperature drop is less than the minimum GPM required to maintain turbulent flow.

Example: From page 12, 20°F water temperature drop  
 170°F AWT, 65°F EAT  
 Unit FSA-18, 8" deep, 20" long  
 BTU = 2335

This capacity rating is less than the MBH (3,000) shown in Table 9 for a 20°F TD and the minimum flow rate of .30 GPM. Applying the following formula to the example above, we may determine the GPM required for a 20°F TD at 2335 BTU.

$$\text{GPM} = \frac{2335 \text{ BTU}}{500 \times 20\text{TD}} \quad \text{GPM} = .23$$

Again, this GPM is too low to maintain turbulent flow within the element tubes. Therefore, use Min. GPM of .30 per Table 9. The water temperature drop which may be expected when using the Min. GPM can be determined using the following formula:

$$\text{TD} = \frac{2335 \text{ BTU}}{500 \times .30} \quad \text{TD} = 15.6^\circ\text{F}$$

**Note:** By using the higher flow rate, a lower water temperature drop will be experienced. Because of this, the average water temperature will be higher and result in a somewhat higher output capacity. For many installations, the use of the minimum GPM from Table 9 will be satisfactory, without further consideration. However, if required, a closer approximation may be obtained by dividing by two and subtracting the result from the entering water temperature of 180°F.

$$\text{i.e. } 180 - \frac{15.6}{2} = 172.2^\circ\text{F AWT}$$

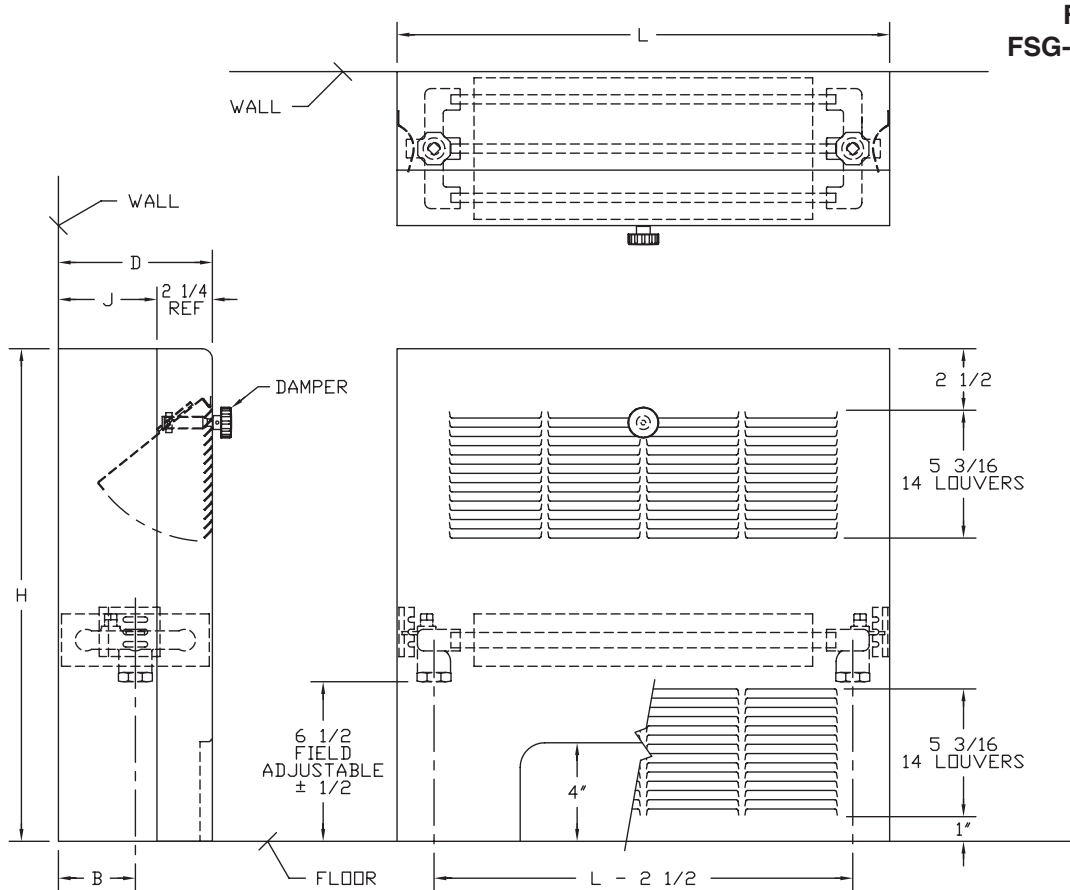
Then, the new MBH rating may be determined by interpolation between the ratings shown on page 12 for the unit at 170°F AWT and 180°F AWT. In the above example, the new rating would be 2415 BTU which would be very close to the actual performance without resorting to further iterations.

# Convector Design/Installation Data

## TYPE FS-A / FSG-A

MODEL	D	L	H	B	J
4xx-18	4-1/4	20,24,28,	18	2-1/8	2
4xx-20		32,36,40,	20		
4xx-24		44,48,52,	24		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-18	6-1/4	20,24,28,	18	3-1/8	4
6xx-20		32,36,40,	20		
6xx-24		44,48,52,	24		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-18	8-1/4	20,24,28,	18	4-1/8	6
8xx-20		32,36,40,	20		
8xx-24		44,48,52,	24		
8xx-26		56,60,64,	26		
8xx-32			32		

**NOTE:** When adding end pockets, liner and front length increase.



**FS-A = ARCHED INLET**  
**FSG-A = LOUVERED INLET**  
**(Grille)**

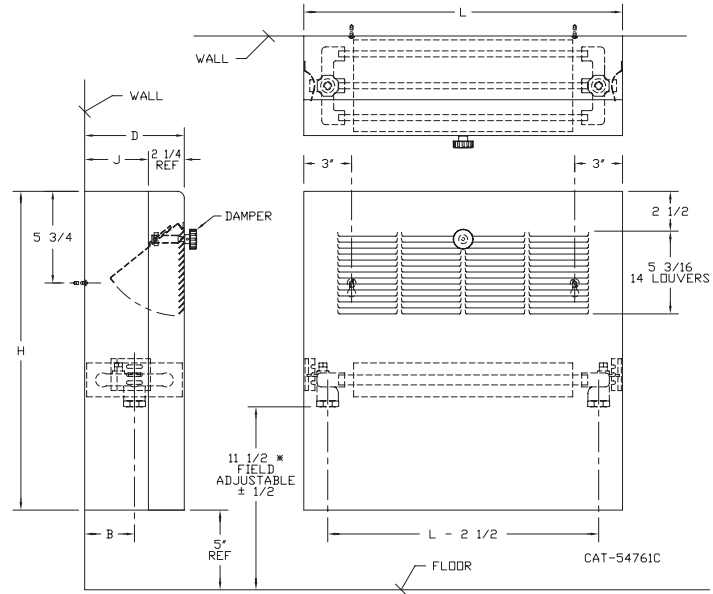
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# Convactor Design/Installation Data

## TYPE W-A

## W-A

MODEL	D	L	H	B	J
4xx-14	4-1/4	20,24,28,	14	2-1/8	2
4xx-18		32,36,40,	18		
4xx-20		44,48,52,	20		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-14	6-1/4	20,24,28,	14	3-1/8	4
6xx-18		32,36,40,	18		
6xx-20		44,48,52,	20		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-14	8-1/4	20,24,28,	14	4-1/8	6
8xx-18		32,36,40,	18		
8xx-20		44,48,52,	20		
8xx-26		56,60,64,	26		
8xx-32			32		



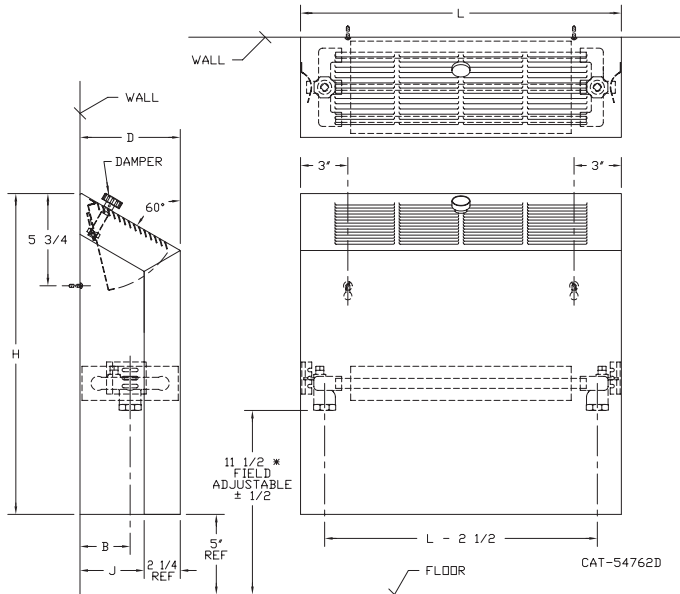
\* 7-1/2" For 14" High Units

**NOTE:** When adding end pockets, liner and front length increase.

## TYPE SW-A

## SW-A

MODEL	D	L	H	B	J
4xx-14	4-1/4	20,24,28,	14	2-1/8	2
4xx-18		32,36,40,	18		
4xx-20		44,48,52,	20		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-14	6-1/4	20,24,28,	14	3-1/8	4
6xx-18		32,36,40,	18		
6xx-20		44,48,52,	20		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-14	8-1/4	20,24,28,	14	4-1/8	6
8xx-18		32,36,40,	18		
8xx-20		44,48,52,	20		
8xx-26		56,60,64,	26		
8xx-32			32		



\* 7-1/2" For 14" High Units

**NOTE:** When adding end pockets, liner and front length increase.

# Convector Design/Installation Data

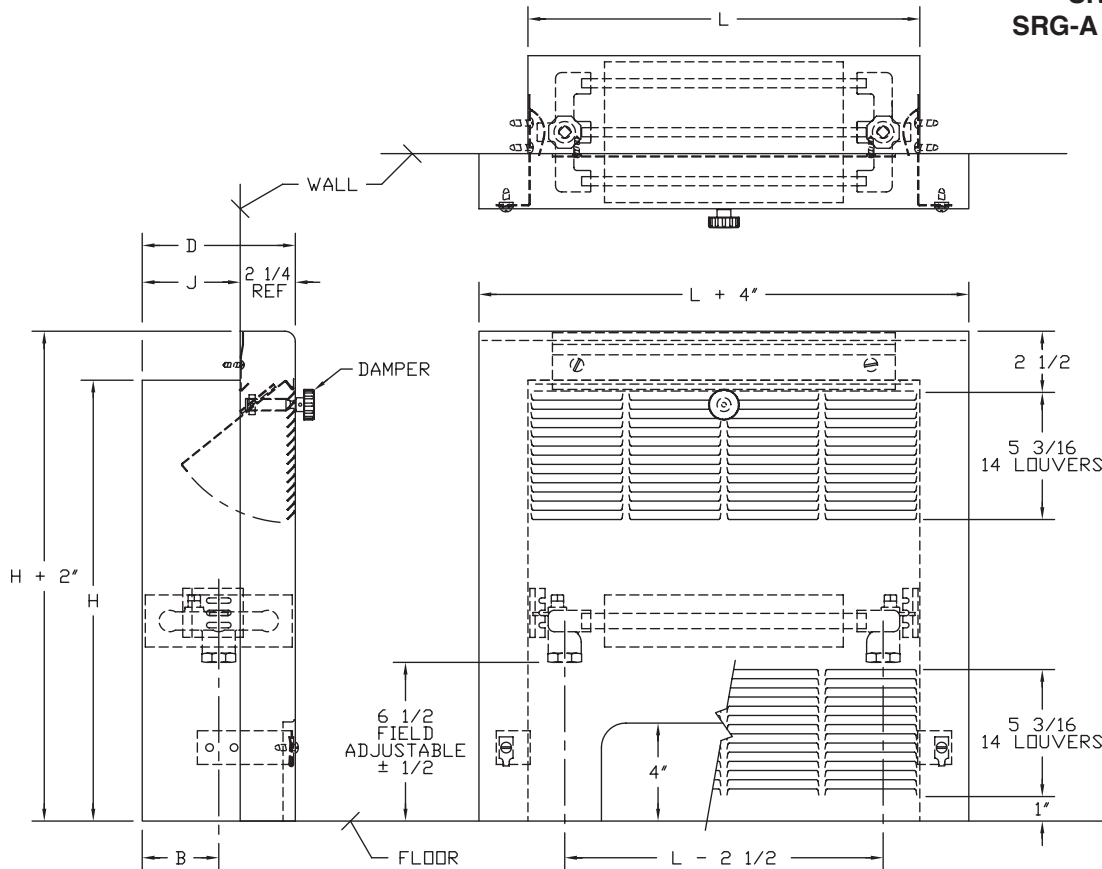
## TYPE SR-A / SRG-A

MODEL	D	L	H	B	J
4xx-16	4-1/4	20,24,28,	16	2-1/8	2
4xx-18		32,36,40,	18		
4xx-22		44,48,52,	22		
4xx-24		56,60,64,	24		
4xx-30			30		
6xx-16	6-1/4	20,24,28,	16	3-1/8	4
6xx-18		32,36,40,	18		
6xx-22		44,48,52,	22		
6xx-24		56,60,64,	24		
6xx-30			30		
8xx-16	8-1/4	20,24,28,	16	4-1/8	6
8xx-18		32,36,40,	18		
8xx-22		44,48,52,	22		
8xx-24		56,60,64,	24		
8xx-30			30		

**NOTE:** Order by Liner Dimensions — L x H.  
When adding end pockets, liner and front length increase.

**SR-A416 = FS-A418 Rating**

**SR-A = ARCHED INLET**  
**SRG-A = LOUVERED INLET**  
**(Grille)**



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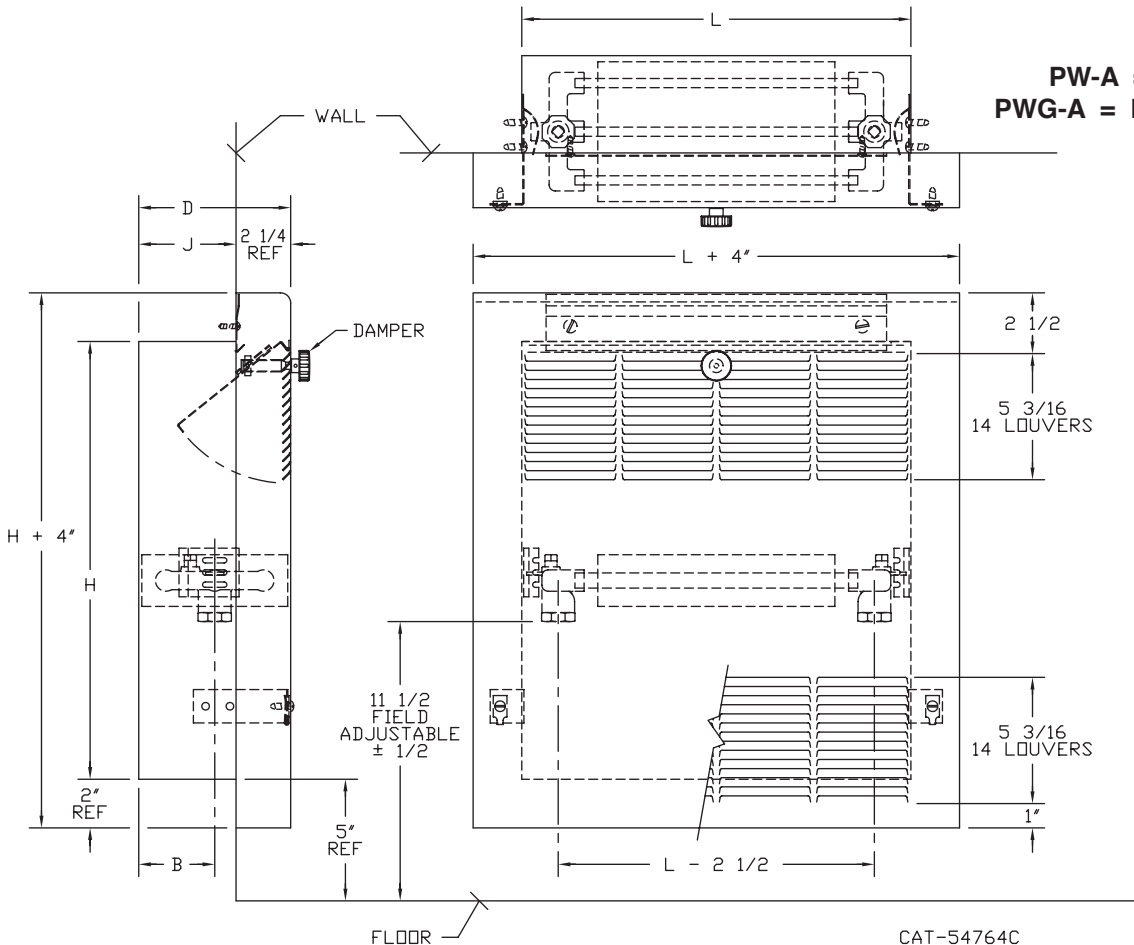


# Convector Design/Installation Data

## TYPE PW-A / PWG-A

MODEL	D	L	H	B	J
4xx-18	4-1/4	20,24,28,	18	2-1/8	2
4xx-20		32,36,40,	20		
4xx-24		44,48,52,	24		
4xx-26		56,60,64,	26		
4xx-28			28		
6xx-18	6-1/4	20,24,28,	18	3-1/8	4
6xx-20		32,36,40,	20		
6xx-24		44,48,52,	24		
6xx-26		56,60,64,	26		
6xx-28			28		
8xx-18	8-1/4	20,24,28,	18	4-1/8	6
8xx-20		32,36,40,	20		
8xx-24		44,48,52,	24		
8xx-26		56,60,64,	26		
8xx-28			28		

**NOTE: Order by Liner Dimensions — L x H.**  
 When adding end pockets, liner and front length increase.



**PW-A = BOTTOM INLET**  
**PWG-A = LOUVERED INLET**  
**(Grille)**

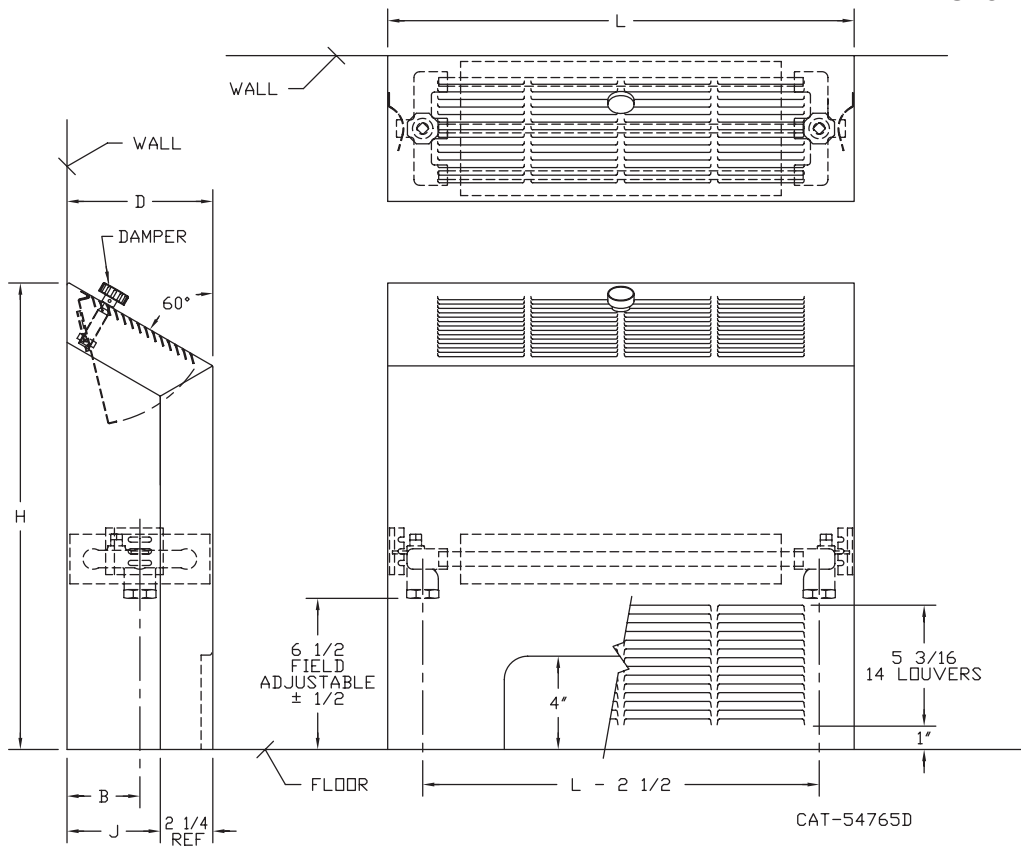
# Convector Design/Installation Data

## TYPE SF-A / SFG-A

MODEL	D	L	H	B	J
4xx-18	4-1/4	20,24,28,	18	2-1/8	2
4xx-20		32,36,40,	20		
4xx-24		44,48,52,	24		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-18	6-1/4	20,24,28,	18	3-1/8	4
6xx-20		32,36,40,	20		
6xx-24		44,48,52,	24		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-18	8-1/4	20,24,28,	18	4-1/8	6
8xx-20		32,36,40,	20		
8xx-24		44,48,52,	24		
8xx-26		56,60,64,	26		
8xx-32			32		

NOTE: When adding end pockets, liner and front length increase.

SF-A = ARCHED INLET  
SFG-A = LOUVERED INLET  
(Grille)



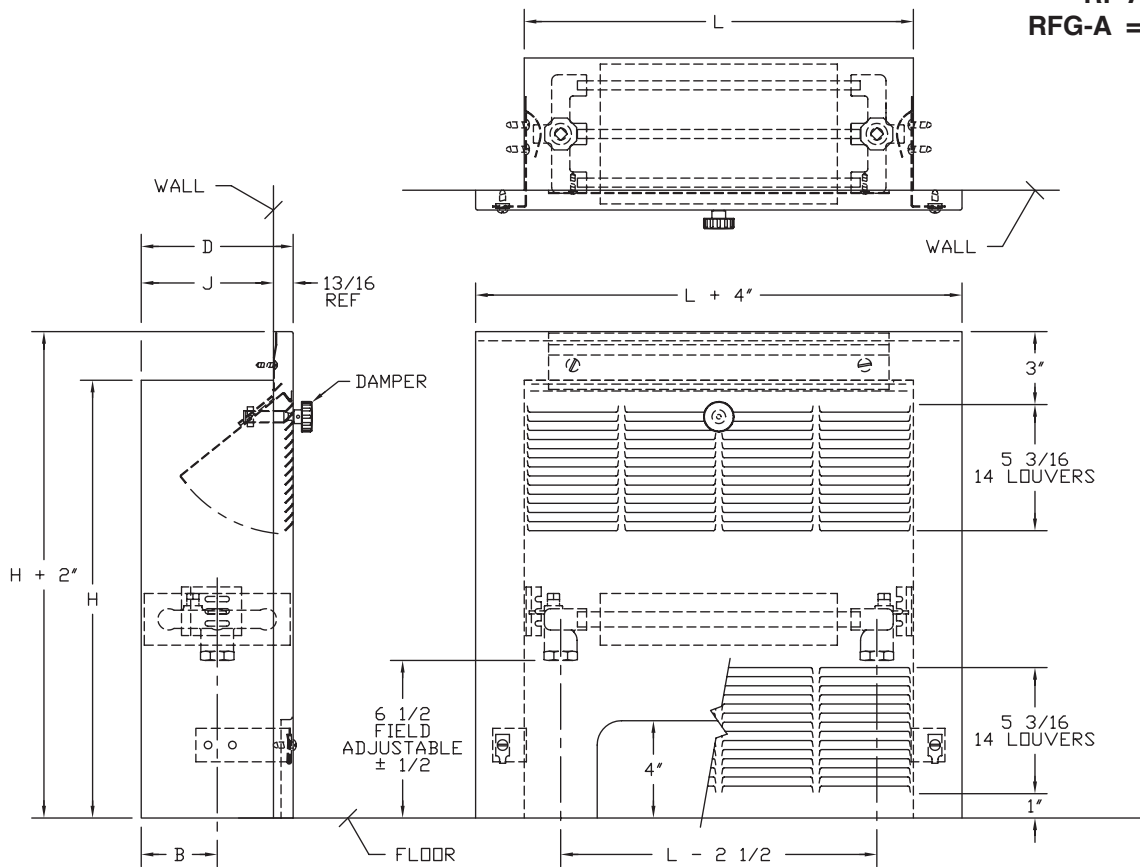
# Convector Design/Installation Data

## TYPE RF-A / RFG-A

MODEL	D	L	H	B	J
4xx-18 4xx-20 4xx-24 4xx-26 4xx-32	4-13/16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	18 20 24 26 32	2-1/8	4
6xx-18 6xx-20 6xx-24 6xx-26 6xx-32	6-13/16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	18 20 24 26 32	3-1/8	6
8xx-18 8xx-20 8xx-24 8xx-26 8xx-32	8-13/16	20,24,28, 32,36,40, 44,48,52, 56,60,64,	18 20 24 26 32	4-1/8	8

**NOTE: Order by Liner Dimensions — L x H.**  
When adding end pockets, liner and front length increase.

**RF-A = ARCHED INLET**  
**RFG-A = LOUVERED INLET**  
(Grille)



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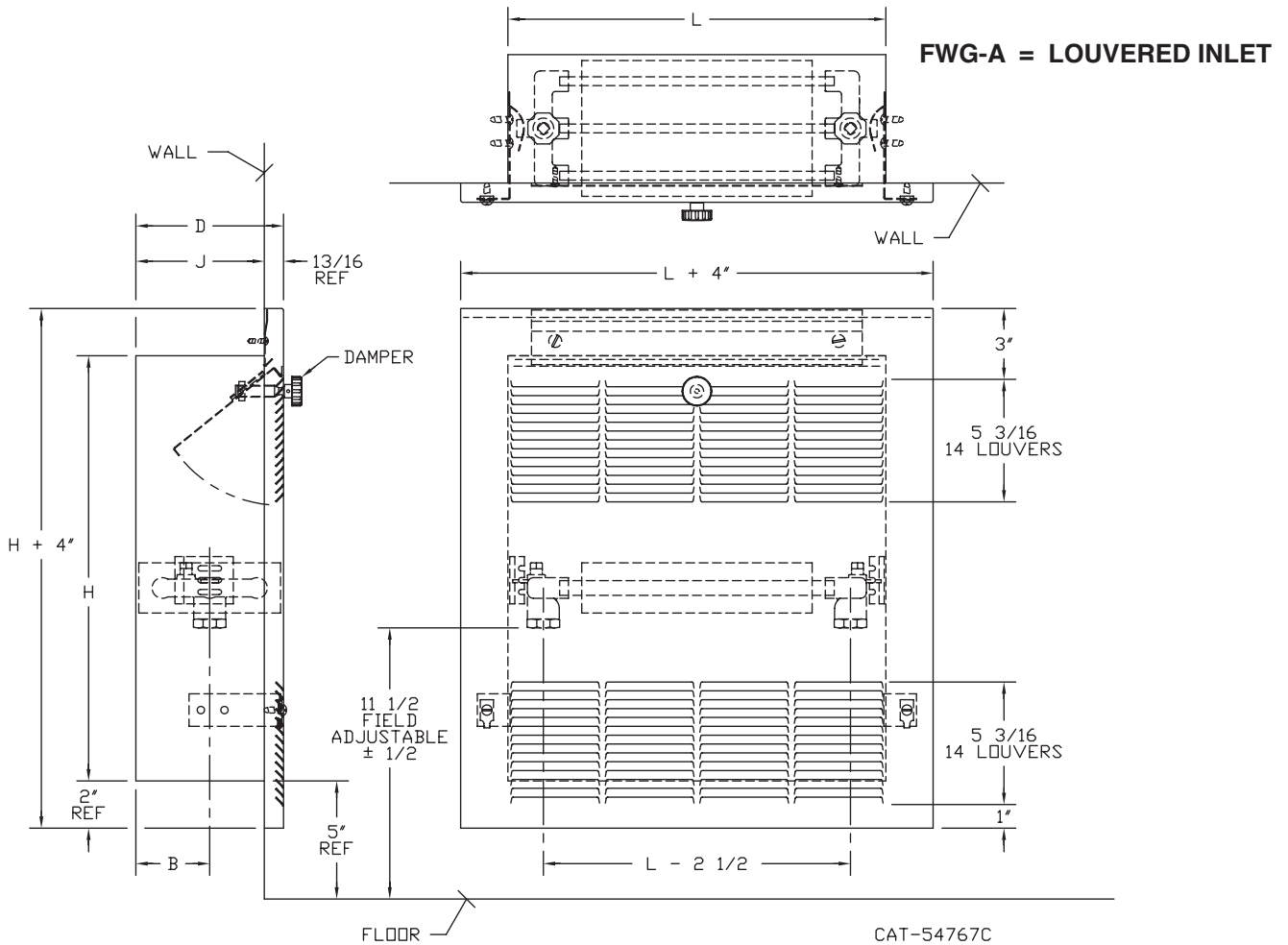
# Convector Design/Installation Data

## TYPE FWG-A

MODEL	D	L	H	B	J
4xx-18	4-13/16	20,24,28,	18	2-1/8	4
4xx-20		32,36,40,	20		
4xx-24		44,48,52,	24		
4xx-26		56,60,64,	26		
4xx-32			32		
6xx-18	6-13/16	20,24,28,	18	3-1/8	6
6xx-20		32,36,40,	20		
6xx-24		44,48,52,	24		
6xx-26		56,60,64,	26		
6xx-32			32		
8xx-18	8-13/16	20,24,28,	18	4-1/8	8
8xx-20		32,36,40,	20		
8xx-24		44,48,52,	24		
8xx-26		56,60,64,	26		
8xx-32			32		

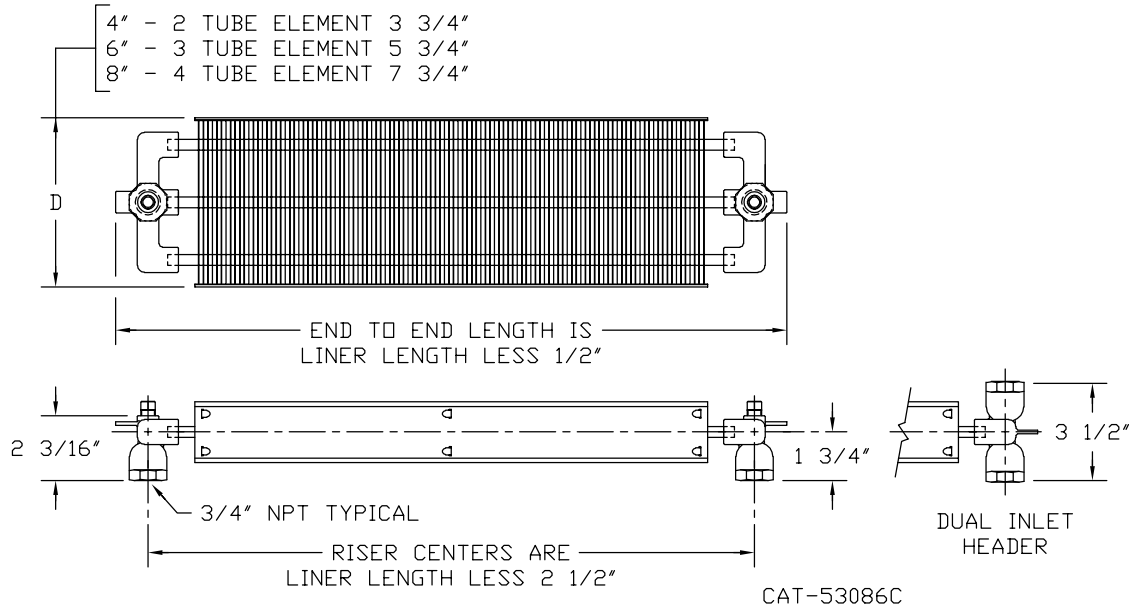
**NOTE: Order by Liner Dimensions — L x H.**  
When adding end pockets, liner and front length increase.

For ratings use those shown on pages 6-13. Same as FSA. Then apply correction factors from Table 7, page 14.

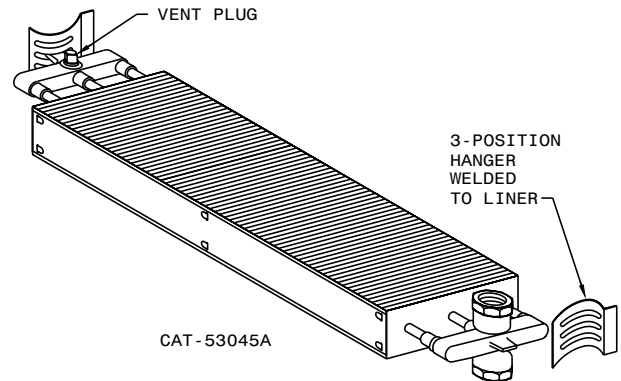


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# Convactor Design/Installation Data



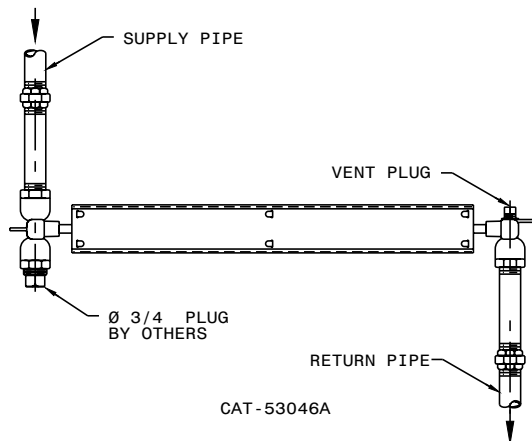
**NOTE:** When ordering convectors with end pockets, always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size. Coil fins are 2 1/2" high by width shown above and are mechanically bonded to copper tube at 6 fins per inch.



Non-ferrous convactor heating elements consist of aluminum fins specially collared and mechanically bonded to 3/8" diameter copper tubes as the primary radiating surface. The tubes are joined at each end by cast bronze headers for connection to the system risers. One header is provided with 1/4" NPT tapping for venting, the other header

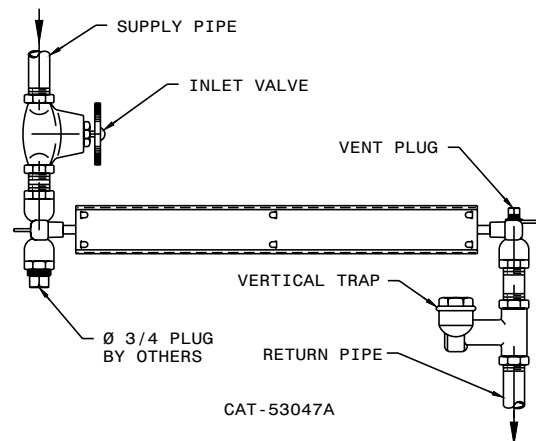
is supplied with a 1/4" NPT galvanized plug. All elements have steel side plates for appearance and strength. Standard heating element is supplied with two single 3/4" NPT headers. An optional dual inlet header is available. This allows for piping to come in from the top or bottom of element. Specify DH header one end when required.

## HOT WATER SYSTEM



## STEAM SYSTEM

(Not recommended for one pipe steam)





# Convector Specifications

## CONVECTOR RADIATORS

Furnish and install Convectors where shown on plans.

### HEATING ELEMENTS

Convector heating elements shall be non-ferrous consisting of 3/8" diameter copper tubing and .010 thick aluminum plate fins with full-flanged collars. The tubes shall be expanded mechanically into fin collars to form a permanent thermal bond. Fins shall be protected front and back by formed shield plates running entire length of element. Headers shall be cast bronze provided with bottom threaded piping connections. Heating elements shall be tested by manufacturer at 100 P.S.I. air pressure under water. Elements shall be supported from brackets on sides of cabinet which shall allow for proper pitching of the element.

### CABINETS GENERAL

Cabinets shall be formed from cold rolled steel and shall be suitably braced and reinforced where necessary to provide stiffness, and accurately fitted to prevent air leakage. Cabinet front shall be flanged top and bottom for added rigidity. Top edge of cabinet fronts shall be smoothly formed with 3/8" inside radius. Air outlet louvers (and inlet louvers where required) shall be the venetian type. 18-gauge cold rolled steel heating element support brackets shall be spot welded to inside ends of all Convector cabinets.

After fabrication, all cabinets shall be thoroughly cleaned, and provided with a high quality baked powder prime finish. Accessory items shall be included as noted per job requirements.

### WALL MOUNTED TO FLOOR CABINETS

#### — TYPE FS-A & FSG-A

Type FS-A Convectors shall be constructed from not less than 18-gauge CRS fronts and tops and 20-gauge CRS back, sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be in top face of front panel. Air inlet shall be through (arched opening Type FS-A) (venetian type louvers stamped in lower section of front panel — same length and height as air outlet louvers Type FSG-A).

### WALL HUNG FLAT-TOP CABINETS

#### — TYPE W-A

Type W-A Convectors shall be constructed from not less than 18-gauge CRS fronts and tops, and 20-gauge CRS back, sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be at top of front panel. Air inlet shall be through open bottom. Back panel has stiffener with key-hole for added support and for mounting to wall.

### WALL HUNG SLOPE TOP CABINETS

#### — TYPE SW-A

Type SW-A cabinets shall be constructed from not less than 18-gauge CRS front and top and 20-gauge CRS back and sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit slip joints. Air outlet louvers of venetian type shall be in slope top. Type SW-A air inlet shall be through open bottom. Back shall be provided with holes for mounting on wall. Back panel has stiffener with key-hole for added support and for mounting to wall.

### WALL MOUNTED TO FLOOR SLOPE TOP CABINETS

#### — TYPES SF-A & SFG-A

Type SF-A & SFG-A cabinets shall be constructed from not less than 18-gauge CRS front and top and 20-gauge CRS back and sides. The front shall wrap around the sides of the cabinet and shall fasten at sides with concealed friction-fit fasteners. Air outlet louvers of venetian type shall be in slope top.

Type SF-A air inlet shall be through arched opening in front panel.

Type SFG-A air inlet shall be through venetian type louvers stamped in front panel, same length and height as air outlet louvers.

### PARTIALLY RECESSED CABINETS

#### — TYPE SR-A & SRG-A, PW-A & PWG-A

Type SR-A & PW-A Convectors shall be constructed from not less than 18-gauge CRS wrap-around fronts and 20-gauge galvanealed\* recessed liner. Depth of cabinet front from wall shall be 2 1/4". Front shall have radiused front edges and shall extend back to wall and fasten to brackets on liner with screws. Front shall be provided with venetian type air outlet grille (and arched air inlet, SR-A) (and integral inlet air grille, SRG-A & PWG-A). Convectors shall be 3 side overlap (for floor mount models, SR-A & SRG-A) and 4 side overlap for wall mounting, model (PWG-A).

### FULLY RECESSED CABINETS

#### — TYPE RF-A & RFG-A & FWG-A

Convectors shall be constructed from not less than 18-gauge CRS fronts and not less than 20-gauge galvanealed liner\*. Fronts shall engage into horizontal securing strip as well as utilizing two front positive locking screws. Fronts shall be provided with venetian type air outlet louvers and integral inlet air louvers (arched air inlet for RF-A). Metal front cabinets shall be three (3) side overlap for floor mounting RF-A and RFG-A models. Wall mounting model FWG-A shall be four (4) sided front cabinets.

All enclosure styles are available with heavy gauge CRS.

Fronts: 18-gauge standard

16-gauge, 14-gauge optional

Liners: 20-gauge standard

18-gauge, 16-gauge, 14-gauge optional

\*When heavy gauge liners are selected for partially recessed and fully recessed units, the liners are supplied in painted CRS.

# Convactor Specifications

## DAMPERS

Provide factory installed knob-operated dampers for Convectors where noted. The operator is to be a fast-action, triple lead screw, knob operated for ease of adjustment.

## ACCESS DOORS

Where noted, Convectors shall be provided with access doors. Access doors shall be 4 1/4" x 4 1/4" and shall be located in the non-louvered area\*. Access doors shall be hinged on top with straight shaft type hinge and secured by a concealed 1/4 turn hex-head operator.

On units 24" high or less, consult factory for available door locations. For units without end pockets at access door locations, an adjustment must be made in the output ratings stated on pages 6 thru 13. See Table 5 on page 14 for derating percentage reductions. No access door available on 14" high units.

\*Note: Refer to page 2 for Standard Access Door Locations.

For units with 14, 16 or 18 inch high liners and gridded (louvered) inlet, a louver bank will be omitted. When Access Doors 3, 4, 5 or 6 are selected, see Table 5 for derating factors.

## END POCKETS

Where noted, Convectors shall be provided with 4" end pockets (right end only) (left end only) (both ends). End pocket shall consist of the cabinet extended in length as noted with 20-gauge CRS baffle spot welded to back of cabinet extending from heating element to air outlet louvers. One end pocket only 64" long units. No end pockets on 64" SR-A or RF-A units.

Note: When ordering convectors with end pockets always refer to the standard unit length. The overall physical length will increase by 4" for each end pocket. The coil length will remain the standard size.

## UNIT SIZE SELECTION

**Example:** Required, a type SW-A convector having an MBH capacity of 14.0, 190°F average water temperature with 20°F temperature drop. Turn to page 10, and using the table for 190°F average water locate a rating of 14.0 or greater. In the columns at the left edge of the table you will find the depth and length of the unit and in the space at the top of the column containing the rating, you will find the height of the unit. It will be noted that several units meet the requirements listed. Select the size which best suits the application.

## INSTITUTIONAL CABINETS

Furnish and install institutional-type Convectors where indicated. Cabinets shall be as described previously under the specific type except that tamper-resistant fasteners (Hex Head Screws) (Hex Head Concealed Locks) shall be provided. (Dampers and access doors where required shall be provided with Hex Head operators).

## OPTIONAL EQUIPMENT

Among optional equipment features available with these Convectors are the following:

1. Damper with Knob Operator. Detailed description on page 3.
2. Access Door. Provided only when specifically ordered, hinged for easy access to valves or vents.\*
3. Knock-outs on sides of cabinet are optional and will be provided only when specifically ordered.

Special models of these Convectors can also incorporate such special design features as integral inlet grilles, insulation, special gauge thickness of enclosure, special fasteners to meet unusual requirements, and various institutional type features as described on page 3.

\*Note: Refer to page 2 for Standard Access Door Locations.

For units with 14, 16 or 18 inch high liners and gridded (louvered) inlet, a louver bank will be omitted. When Access Doors 3, 4, 5 or 6 are selected, see Table 5 for derating factors.

**Example:** Required, an FS-A convector having 40.5 EDR at 215°F steam. Select size 6-40-24 from table #1 on page 6, which furnishes 40.9 EDR, or any other size furnishing 40.5 or more EDR. If the requirements are given in BTU's per hour (steam system) divide the BTU requirements by 240 to obtain the EDR capacity required and select the convector direct from table 1 and 2.

Notes:

Notes:

# Other Products Manufactured by Beacon Morris



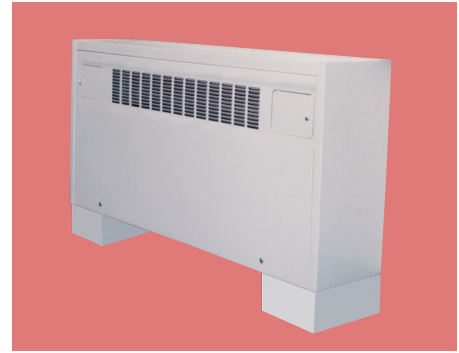
## Horizontal Unit Heater.

The Beacon Morris horizontal steam/hot water unit heaters are available in twenty three models ranging from 8,000 BTUH to 360,000 BTUH (steam ratings). Available at competitive prices, and fast delivery makes it an easy choice.



## Vertical Unit Heater.

The Beacon Morris vertical steam/hot water unit heaters are available in ten new models ranging from 35,190 BTUH to 705,000 BTUH (steam). Low temperature models are also available.



## Cabinet Unit Heaters.

These units feature a unique solid state speed control for efficient and quiet operation. Available in attractive floor models and basic units for concealed or recessed installations.



## Twin-Flo.

When there's no space left for baseboard, install The Original space-saving Twin-Flo Heaters. Twin-Flo goes where convectors or baseboard cannot.

Our Twin-Flo kick space model measures a mere 4" x 12 1/4" x 12 3/4". But don't let its small size fool you — it delivers 4,278 BTU's, that's the equivalent of 9 feet of baseboard heating. Compact Twin-Flo units install in existing hot water heating systems.

So remember, no matter how tight the space, The Original Twin-Flo can solve your customers' needs. Four models in three sizes to choose from: 4,278, 8,460 and 11,585 BTU outputs.



## Low Profile Tubular Gas-Fired Unit Heaters

BRUT II low profile, gas-fired unit heaters are built by design. The durable tubular heat exchanger provides maximum and uniform heat transfer for longer service life.

ETL certified for residential, commercial and industrial installation, BRUT II units operate at 82-83% thermal efficiency.

Seven low profile units to choose from 30,000 to 120,000 BTU/Hr.



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