

CLASSIC

Submittal

JV4/V4-AR10LI
Classic Architectural
Copper/Aluminum and
Steel Elements

Specification

JV4 Slip Jointed Enclosure

ENCLOSURE:

STYLE: Classic Louvered Inlet
OUTLET: Extruded Aluminum
Pencil Proof

LENGTHS: 2'0" thru 8'0" in 6" Increments

MAT'L: 16 Ga. CRS (Std)
 14 Ga. CRS (Opt'l)
 16 Ga. Stainless Steel (Opt'l)*
 14 Ga. Stainless Steel (Opt'l)*
 14 Ga. Aluminum (Opt'l)
 12 Ga. Aluminum (Opt'l)

*Available on "J" Style Only

FINISH: Baked Powder (Std)
 Baked Metallic (Opt'l)

FLOOR ANGLE:

Ext. Al (Clear Anodized)

ACCESSORIES:

JV4 Overlapping Type
 V4 Underlapping Type

ELEMENT:

TYPE: Cu/Al (Mechanically Expanded)

LENGTHS: 2'0" thru 12'6" in 1" Increments for 1" & 1-1/4" Cu.
2'0" thru 8'0" in 1" Increments for 3/4" Cu.

One End Flared, (Std)

TYPE: IPS Steel (Mechanically Expanded)

LENGTHS: 2'0" Thru 12'0" in 1" Increments
 NPT Thread both Ends (Std)
 Beveled Ends for Field Weld

See Catalog for Working Pressures

V4 Wiped Edge Enclosure

BACKPLATE:

TYPE: Partial B/P

LENGTHS: 8'0" Only

MAT'L: 20 Ga. Prepainted (Std)
 18 Ga. Galvannealed (Opt'l)

TYPE: Full Ht. B/P (Opt'l)

LENGTHS: 2'0" thru 8'0" in 6" Increments

MAT'L: 20 Ga. Galvannealed (Opt'l)
 20 Ga. Painted (Opt'l)
 18 Ga. Painted (Opt'l)

AIRSEAL:

1/8" x 3/8" Closed Cell (Opt'l)

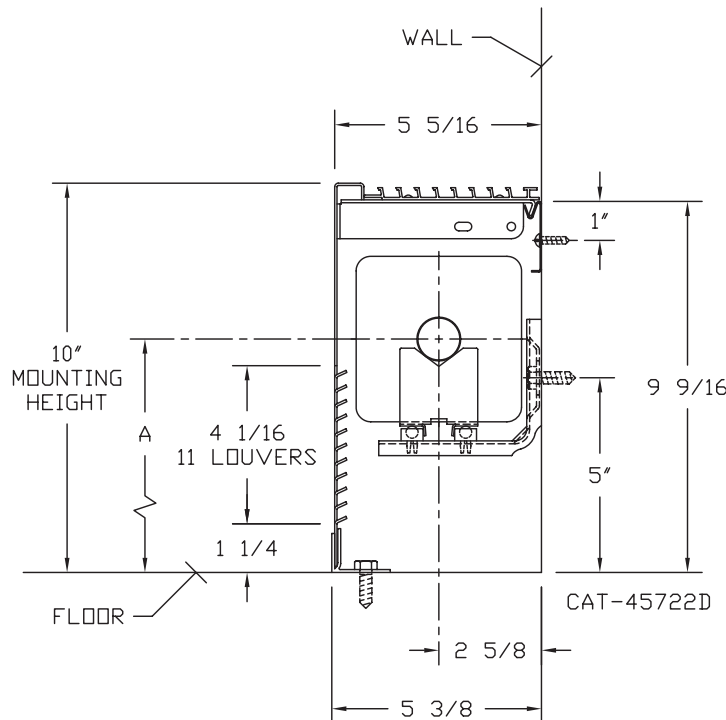
BRACKETS:

B.B. Hgr Wall Mtd. B

DAMPER:

Slide Damper (Opt'l)

JV4/V4-AR10LI
(JV4 Shown)



ELEMENT TUBE SIZE	FIN SIZE HEIGHT x WIDTH	CRADLE NUMBER	A
3/4 COPPER	3 5/8 x 4 1/4	2	5 13/16
3/4 COPPER	4 1/4 x 4 1/4	3A	6 3/16
1" COPPER	3 5/8 x 4 1/4	2	6"
1" COPPER	4 1/4 x 4 1/4	2	6"
1 1/4 COPPER	3 5/8 x 4 1/4	2	6 1/8
1 1/4 COPPER	4 1/4 x 4 1/4	2	6 1/8
1" STEEL	4 1/4 x 4 1/4	2	6 1/8
1 1/4 STEEL	4 1/4 x 4 1/4	2	6 5/16
2" STEEL	4 1/4 x 4 1/4	1	6 1/8



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www.vulcanrad.com



PROJECT: _____ DATE: _____
 LOCATION: _____
 ARCHITECT: _____
 ENGINEER: _____
 CONTRACTOR: _____
 PO NUMBER: _____

STYLE JV4/V4-AR10LI

COPPER/ALUMINUM ELEMENT RATINGS

ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FINS PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MTG. HEIGHT IN INCHES	STEAM 215° FACTOR	HOT WATER (AVG.)									
									200°	190°	180°	170°	160°	150°	140°	130°	120°	
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES									
									1.00	0.86	0.78	0.69	0.61	0.53	0.45	.40	.33	.26
3/4"	VC3/4-433	3-5/8" x 4-1/4"	32	.020	10	1	10	1020	880	800	700	620	540	460	410	340	270	
3/4"	VC3/4-434	3-5/8" x 4-1/4"	40	.020	10	1	10	1180	1010	920	810	720	630	530	470	390	310	
3/4"	VC3/4-435	3-5/8" x 4-1/4"	50	.020	10	1	10	1255	1080	980	870	770	670	560	500	410	330	
1"	VC433	3-5/8" x 4-1/4"	32	.020	10	1	10	1090	940	850	750	660	580	490	440	360	280	
1"	VC434	3-5/8" x 4-1/4"	40	.020	10	1	10	1200	1030	940	830	730	640	540	480	400	310	
1"	VC435	3-5/8" x 4-1/4"	50	.020	10	1	10	1290	1110	1010	890	790	680	580	520	430	340	
1-1/4"	VC1433	3-5/8" x 4-1/4"	32	.020	10	1	10	1070	920	830	740	650	570	480	430	350	280	
1-1/4"	VC1434	3-5/8" x 4-1/4"	40	.020	10	1	10	1180	1010	920	810	720	630	530	470	390	310	
1-1/4"	VC1435	3-5/8" x 4-1/4"	50	.020	10	1	10	1270	1090	990	880	770	670	570	510	420	330	
3/4"	VC3/4-43	4-1/4" SQ.	32	.020	10	1	10	1190	1020	930	820	730	630	540	480	390	310	
3/4"	VC3/4-44	4-1/4" SQ.	40	.020	10	1	10	1290	1110	1010	890	790	680	580	520	430	340	
3/4"	VC3/4-45	4-1/4" SQ.	50	.020	10	1	10	1310	1130	1020	900	800	690	590	520	430	340	
1"	VC43	4-1/4" SQ.	32	.020	10	1	10	1200	1030	940	830	730	640	540	480	400	310	
1"	VC44	4-1/4" SQ.	40	.020	10	1	10	1320	1140	1030	910	810	700	590	530	440	340	
1"	VC45	4-1/4" SQ.	50	.020	10	1	10	1340	1150	1050	920	820	710	600	540	440	350	
1-1/4"	VC143	4-1/4" SQ.	32	.020	10	1	10	1170	1010	910	810	710	620	530	470	390	300	
1-1/4"	VC144	4-1/4" SQ.	40	.020	10	1	10	1300	1120	1010	900	790	690	590	520	430	340	
1-1/4"	VC145	4-1/4" SQ.	50	.020	10	1	10	1320	1140	1030	910	810	700	590	530	440	340	

STEEL ELEMENT RATINGS

ALL RATINGS ARE IN BTU/HR/LIN FT AND BASED ON 3 FPS VELOCITY, 65° EAT

TUBE SIZE	CATALOG DESIGNATION	FIN SIZE HEIGHT X WIDTH	FINS PER FT.	FIN THICKNESS IN INCHES	ENCL HEIGHT IN INCHES	TIERS AND CENTERS IN INCHES	MTG. HEIGHT IN INCHES	STEAM 215° FACTOR	HOT WATER (AVG.)									
									200°	190°	180°	170°	160°	150°	140°	130°	120°	
									CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES									
									1.00	0.86	0.78	0.69	0.61	0.53	0.45	.40	.33	.26
1"	VS43	4-1/4" SQ.	32	.032	10	1	10	1045	900	820	720	640	550	470	420	340	270	
1"	VS44	4-1/4" SQ.	40	.032	10	1	10	1140	980	890	790	700	600	510	460	380	300	
1"	VS45	4-1/4" SQ.	50	.032	10	1	10	1225	1050	960	850	750	650	550	490	400	320	
1-1/4"	VS143	4-1/4" SQ.	32	.032	10	1	10	960	830	750	660	590	510	430	380	320	250	
1-1/4"	VS144	4-1/4" SQ.	40	.032	10	1	10	1150	990	900	790	700	610	520	460	380	300	
1-1/4"	VS145	4-1/4" SQ.	50	.032	10	1	10	1210	1040	940	830	740	640	540	480	400	310	
2"	VS242	4-1/4" SQ.	25	.032	10	1	10	905	780	710	620	550	480	410	360	300	240	
2"	VS243	4-1/4" SQ.	32	.032	10	1	10	1075	920	840	740	660	570	480	430	350	280	

DESIGN DATA

COMMERCIAL FINNED TUBE RATING CORRECTION CHARTS

CATALOG FINNED TUBE RATINGS ARE BASED UPON THE FOLLOWING CONDITIONS:

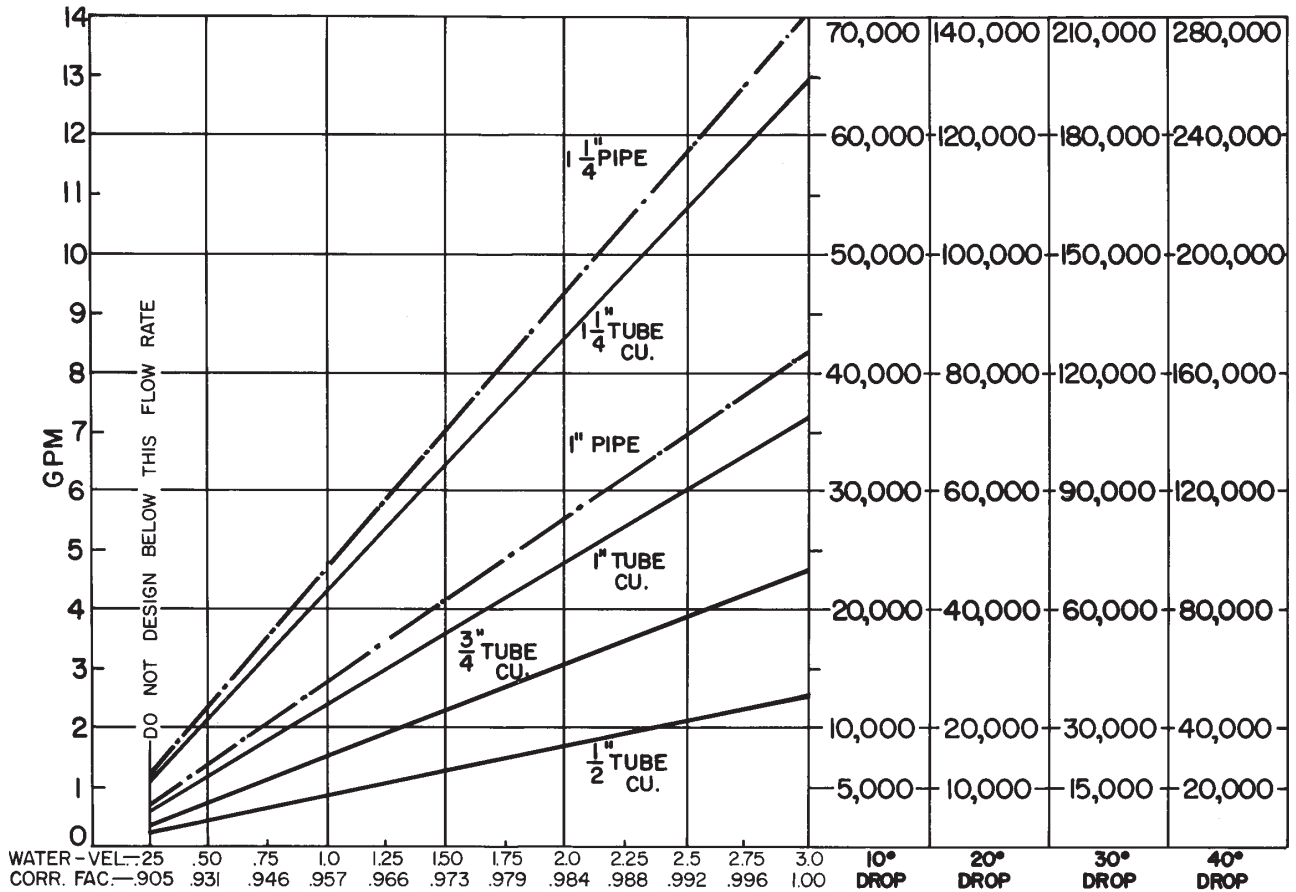
- 215°F AVERAGE WATER OR STEAM TEMPERATURE
- 65°F ENTERING AIR TEMPERATURE
- 3 FEET PER SECOND WATER FLOW RATE
- CATALOG MOUNTING HEIGHT

USE THE FOLLOWING CALCULATION WITH CORRECTION FACTORS FOR JOB CONDITIONS TO DETERMINE CORRECTED RATING:

$$\text{CORRECTED RATING} = (\text{215°F CATALOG RATING}) \times \left(\frac{\text{CORRECTION FACTOR FOR STEAM OR WATER AND AVERAGE AIR TEMP.}}{\text{CORRECTION FACTOR FOR FLOW RATE}} \right) \times \left(\frac{\text{CORRECTION FOR MOUNTING HTG.-SEE CATALOG RATING}}{\text{CORRECTION FACTOR FOR MOUNTING HTG.-SEE CATALOG RATING}} \right)$$

USE THE FOLLOWING CHARTS TO SELECT CORRECTION FACTORS

CHART/WATER VEL./CORR. FACTOR / PRESS. DROP/TOTAL BTU.

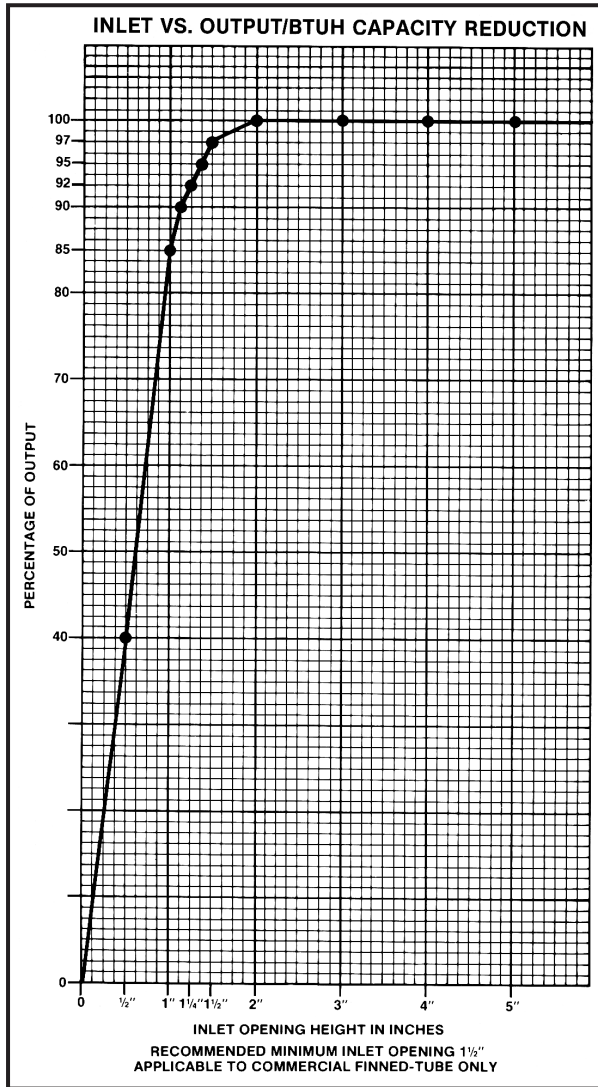


1/2" COP. ALUM.	1,80	2,33	5,33	9,16					
3/4" COP. ALUM.	.5	1,5	3,16	5,4	6,25				
1" COP. ALUM.	.233	.41	.83	1,45	2,16	2,83	3,66		
1" PIPE	.37	.79	1,3	2,00	2,70	3,70	4,80		
1 1/4" COP. ALUM.	.16	.33	.55	.79	1,08	1,33	1,8	2,25	2,26
1 1/4" PIPE	.09	.18	.31	.5	.70	1,0	1,1	1,3	1,6
								1,8	2,58
									2,3
									3,3

PRESSURE DROP PER 100 LINEAR FT., IN FEET OF HEAD

DESIGN DATA

INLET AIR CORRECTION FACTOR



GUARANTEED WORKING PRESSURES

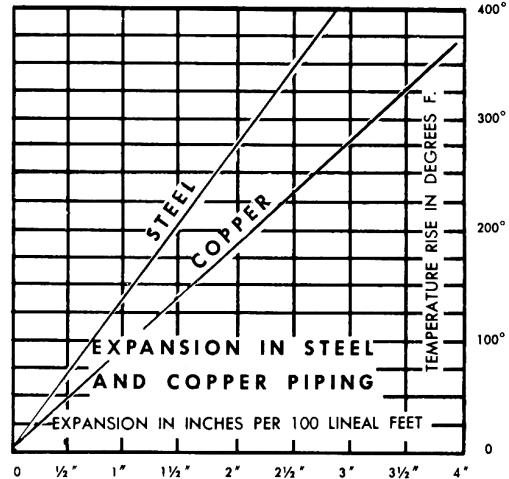
- 1" IPS — 780 AT TEMPERATURES UP TO 650°F.
 - 1 1/4" IPS — 660 AT TEMPERATURES UP TO 650°F.
 - 2" IPS — 405 AT TEMPERATURES UP TO 650°F.
 - 1 1/4" CU — 194 AT TEMPERATURES UP TO 300°F.
 - 1" CU — 204 AT TEMPERATURES UP TO 300°F.
 - 3/4" CU — 218 PSI AT TEMPERATURES UP TO 300°F.
- MAXIMUM PRESSURES AT OTHER TEMPERATURES ARE AVAILABLE UPON REQUEST.

RATE OF PITCH FOR STEAM 1/2" DROP OVER 20 FT. RUN.

PIPE WATER CAPACITIES AND QUANTITIES CIRCULATED AT VELOCITY OF 3* FEET PER SECOND			
Pipe Size	Gals. Per Linear Ft.	Gals./Min. @ 3' Sec. Vel.*	Lbs./Hr. @ 3' Sec. Vel.*
1/2"	.016	2.88	1440
3/4"	.023	4.14	2070
1"	.040	7.20	3600
1 1/4"	.063	11.34	5660
1 1/2"	.102	18.36	9160
2"	.170	30.60	15300
2 1/2"	.275	49.50	24850
3"	.390	70.20	35000

*3 Ft./Sec. Velocity is Basic for Hot Water Rating Factors Shown on this Page.

$$\text{VELOCITY FT./SEC.} = \frac{\text{LBS. PER HOUR}}{(\text{GALS. PER FT.}) (3600) (8.3)}$$



GLYCOL CORRECTION FACTORS

Fluid Temperature 200°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.952	.988
30	.921	.968
40	.888	.943
50	.852	.912

Fluid Temperature 180°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.946	.982
30	.913	.961
40	.879	.934
50	.842	.902

Fluid Temperature 140°F

% Solution	Ethylene Glycol	Propylene Glycol
20	.934	.97
30	.898	.946
40	.861	.916
50	.821	.881

ALTITUDE FACTORS

Approximate factors for convective heat value at varying altitudes

Altitude	Ferrous Units	Copper Alum. Units
Sea Level	1.000	1.000
1,000 ft.	.984	.969
2,000 ft.	.968	.938
3,000 ft.	.952	.908
4,000 ft.	.936	.878
5,000 ft.	.920	.850
6,000 ft.	.904	.822
7,000 ft.	.889	.795
8,000 ft.	.874	.768
9,000 ft.	.859	.743
10,000 ft.	.844	.718
15,000 ft.	.771	.603
20,000 ft.	.703	.502

CORRECTION FACTORS FOR STEAM PRESSURES AND AIR TEMPERATURES OTHER THAN STANDARD

STEAM		ENTERING AIR TEMPERATURE, °F														
Pressure		Temp.			STD											
Gauge	Abs. Psi	°F	45	55	65	70	75	80	85	90	100	110	120	130	140	150
(Vac) 15" Hg	7.32	178.9	0.90	0.80	0.70	0.65	0.60	0.56	0.51	0.45	0.39	0.32	0.25	0.18	0.13	0.08
(Vac) 10"	9.78	192.2	1.02	0.91	0.81	0.76	0.71	0.66	0.62	0.55	0.48	0.40	0.33	0.26	0.20	0.14
(Vac) 5"	12.25	202.9	1.11	1.00	0.90	0.85	0.79	0.75	0.70	0.63	0.56	0.48	0.40	0.33	0.27	0.20
(Vac) 0 Psi	14.696	212.0	1.19	1.09	0.97	0.92	0.87	0.82	0.77	0.70	0.63	0.54	0.46	0.38	0.31	0.25
▶ .899	15.595	215.0	1.22	1.11	1.00	0.95	0.90	0.84	0.80	0.75	0.65	0.57	0.48	0.40	0.33	0.26
5	19.70	227.1	1.34	1.22	1.11	1.05	1.00	0.95	0.90	0.81	0.75	0.66	0.57	0.49	0.41	0.34
10	24.70	239.4	1.45	1.33	1.22	1.17	1.11	1.05	1.00	0.91	0.85	0.75	0.66	0.58	0.50	0.42
15	29.70	249.8	1.55	1.43	1.31	1.26	1.20	1.14	1.09	1.00	0.94	0.84	0.75	0.66	0.57	0.49
20	34.70	258.8	1.63	1.52	1.40	1.33	1.28	1.23	1.17	1.07	1.02	0.92	0.82	0.73	0.64	0.55
25	39.70	266.8	1.71	1.59	1.47	1.41	1.36	1.30	1.25	1.15	1.09	0.98	0.89	0.80	0.71	0.62
30	44.70	274.0	1.78	1.66	1.54	1.48	1.42	1.37	1.31	1.21	1.15	1.05	0.95	0.85	0.76	0.68
40	54.70	286.7	1.91	1.79	1.66	1.61	1.54	1.49	1.43	1.32	1.27	1.16	1.06	0.97	0.87	0.78
50	64.70	297.7	2.02	1.90	1.77	1.71	1.65	1.60	1.54	1.42	1.37	1.26	1.16	1.06	0.96	0.87
60	74.70	307.3	2.10	2.00	1.87	1.81	1.75	1.69	1.63	1.51	1.47	1.35	1.25	1.15	1.05	0.95
70	84.70	316.0	2.20	2.09	1.95	1.89	1.83	1.77	1.71	1.59	1.55	1.44	1.33	1.23	1.12	1.03
80	94.70	323.9	2.27	2.17	2.03	1.97	1.91	1.85	1.80	1.69	1.63	1.52	1.41	1.31	1.20	1.10
90	104.70	331.2	2.36	2.24	2.11	2.05	1.98	1.93	1.87	1.74	1.70	1.59	1.48	1.38	1.28	1.17
100	114.70	337.9	2.43	2.31	2.18	2.11	2.05	2.00	1.94	1.81	1.77	1.65	1.54	1.44	1.33	1.23
125	139.70	352.9	2.59	2.47	2.33	2.27	2.21	2.16	2.10	1.96	1.92	1.80	1.69	1.59	1.48	1.38
150	164.70	365.9	2.73	2.62	2.47	2.43	2.35	2.29	2.23	2.08	2.05	1.94	1.82	1.72	1.61	1.51
175	189.70	377.4	2.86	2.74	2.60	2.54	2.47	2.41	2.35	2.21	2.17	2.05	1.95	1.85	1.73	1.63
200	214.70	387.8	2.95	2.85	2.71	2.63	2.58	2.52	2.47	2.31	2.29	2.17	2.06	1.96	1.84	1.75

From Keenan and Keyes — Linear Interpolation.

Note: Gauge pressure should be corrected for altitude.

CORRECTION FACTORS FOR WATER TEMPERATURES AND AIR TEMPERATURES OTHER THAN STANDARD

AVERAGE WATER TEMP. °F	ENTERING AIR TEMPERATURE, °F														
	45	55	STD	70	75	80	85	90	95	100	110	120	130	140	150
90	.19	.13	.11	.06											
100	.25	.19	.15	.11	.08	.06									
110	.31	.25	.20	.16	.13	.11	.08	.06							
120	.38	.31	.26	.21	.19	.16	.13	.11	.08	.06					
130	.45	.38	.33	.28	.25	.21	.19	.16	.13	.11	.06				
140	.53	.45	.40	.34	.31	.28	.25	.21	.19	.16	.11	.06			
150	.61	.53	.45	.41	.38	.34	.31	.28	.25	.21	.16	.11	.06		
160	.69	.61	.53	.49	.45	.41	.38	.34	.31	.28	.21	.16	.11	.06	
170	.77	.69	.61	.57	.53	.49	.45	.41	.38	.34	.28	.21	.16	.11	.06
180	.86	.77	.69	.65	.61	.57	.53	.49	.45	.41	.34	.28	.21	.16	.11
190	.95	.86	.78	.73	.69	.65	.61	.57	.53	.49	.41	.34	.28	.21	.16
200	1.05	.95	.86	.82	.77	.73	.69	.65	.61	.57	.49	.41	.34	.28	.21
210	1.14	1.05	.95	.91	.86	.82	.77	.73	.69	.65	.57	.49	.41	.34	.28
▶ 215 (STD.)	1.19	1.09	1.00	.95	.91	.86	.82	.77	.73	.69	.61	.53	.45	.38	.31
220	1.24	1.14	1.05	1.00	.95	.91	.86	.82	.77	.73	.65	.57	.49	.41	.34
230	1.34	1.24	1.14	1.09	1.05	1.00	.95	.91	.86	.82	.73	.65	.57	.49	.41
240	1.44	1.34	1.25	1.19	1.14	1.09	1.05	1.00	.95	.91	.82	.73	.65	.57	.49
250	1.55	1.44	1.34	1.29	1.24	1.19	1.14	1.09	1.05	1.00	.91	.82	.73	.65	.57
260	1.66	1.55	1.44	1.39	1.34	1.29	1.24	1.19	1.14	1.09	1.00	.91	.82	.73	.65
270	1.76	1.66	1.55	1.50	1.44	1.39	1.34	1.29	1.24	1.19	1.09	1.00	.91	.82	.73
280	1.87	1.76	1.66	1.60	1.55	1.50	1.44	1.39	1.34	1.29	1.19	1.09	1.00	.91	.82
290	1.99	1.87	1.76	1.71	1.66	1.60	1.55	1.50	1.44	1.39	1.29	1.19	1.09	1.00	.91
300	2.10	1.99	1.87	1.82	1.76	1.71	1.66	1.60	1.55	1.50	1.39	1.29	1.19	1.09	1.00