

# VERSA-LINE

## Submittal

JVA-RD / JVB-RD  
Versa-Line  
Copper/Aluminum and  
Steel Element Ratings

# Specification

### JVA Slip Jointed Enclosure

#### ENCLOSURE:

- STYLE: Flat Top, Rounded Outlet  
 OUTLET: Stamped Louvers  
 Pencil Proof
- LENGTHS: 2'0" thru 8'0" in 6" Increments  
 MAT'L:  16 Ga. CRS (Std)  
 14 Ga. Aluminum (Opt'l)  
 HEIGHT:  14"  
 20" (JVB only)  
 24" (JVB only)  
 FINISH:  Baked Powder (Std)  
 Baked Metallic (Opt'l)

#### ACCESSORIES:

- JV Overlapping Type  
 All accessories return to the wall at the bottom  
 and have pre-punched holes for fastening to  
 the wall.

#### 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 12'6" in 1" Increments  
 NPT Thread both Ends (Std)  
 Beveled Ends for Field Weld (Opt'l)

See Catalog for Working  
 Pressures

### JVB Slip Jointed 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:

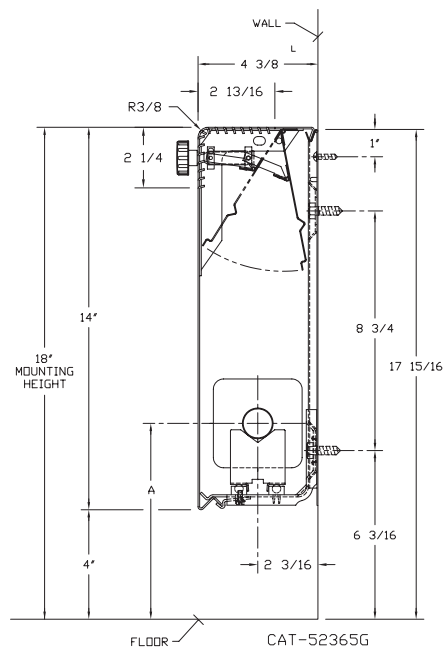
- Water Brkt w/B.B.  
 Steam Brkt w/Brkt Mtd  
 B.B. Hgr

#### DAMPER:

- Damper Blades Factory  
 Installed  
 Knob Damper (Opt'l)  
 Tamper Resistant (Opt'l)

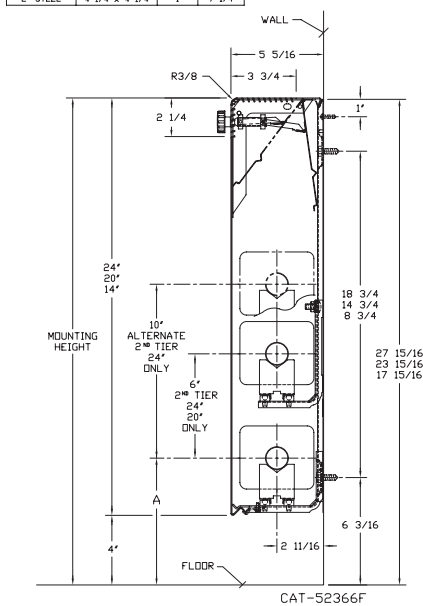
### JVA-RD14

| ELEMENT TUBE SIZE | FIN SIZE HEIGHT x WIDTH | GRABLE NUMBER | A       |
|-------------------|-------------------------|---------------|---------|
| 3/4 COPPER        | 3 1/4 x 3 1/4           | 2             | 7"      |
| 1" COPPER         | 3 1/4 x 3 1/4           | 2             | 7 3/16  |
| 1 1/4 COPPER      | 3 1/4 x 3 1/4           | 1             | 6 5/8   |
| 1" STEEL          | 3 1/4 x 3 1/4           | 2             | 7 5/16  |
| 1 1/4 STEEL       | 3 1/4 x 3 1/4           | 1             | 6 13/16 |



### JVB-RD14 20 24

| ELEMENT TUBE SIZE | FIN SIZE HEIGHT x WIDTH | GRABLE NUMBER | A      |
|-------------------|-------------------------|---------------|--------|
| 3/4 COPPER        | 3 5/8 x 4 1/4           | 2             | 7"     |
| 3/4 COPPER        | 4 1/4 x 4 1/4           | 3A            | 7 3/8  |
| 1" COPPER         | 3 5/8 x 4 1/4           | 2             | 7 3/16 |
| 1" COPPER         | 4 1/4 x 4 1/4           | 2             | 7 3/16 |
| 1 1/4 COPPER      | 3 5/8 x 4 1/4           | 2             | 7 5/16 |
| 1 1/4 COPPER      | 4 1/4 x 4 1/4           | 2             | 7 5/16 |
| 1" STEEL          | 4 1/4 x 4 1/4           | 2             | 7 5/16 |
| 1 1/4 STEEL       | 4 1/4 x 4 1/4           | 2             | 7 1/2  |
| 2" STEEL          | 4 1/4 x 4 1/4           | 1             | 7 1/4  |



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 www.sterlingheat.com



PROJECT: \_\_\_\_\_ DATE: \_\_\_\_\_  
 LOCATION: \_\_\_\_\_  
 ARCHITECT: \_\_\_\_\_  
 ENGINEER: \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_  
 PO NUMBER: \_\_\_\_\_

# STYLE "JVA-RD / JVB-RD" VERSA-LINE

## COPPER/ALUMINUM ELEMENTS

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 DEPTH AND HEIGHT IN INCHES | TIERS AND CENTERS IN INCHES | MOUNTING 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 |
| 3/4"      | C3/4-33             | 3-1/4" SQ.              | 32           | .020                    | 14A                             | 1                           | 18                        | 1070              | 920   | 830  | 740  | 650  | 570  | 480  | 430  | 350  | 280  |
| 3/4"      | C3/4-34             | 3-1/4" SQ.              | 40           | .020                    | 14A                             | 1                           | 18                        | 1240              | 1070  | 970  | 860  | 760  | 660  | 560  | 500  | 410  | 320  |
| 3/4"      | C3/4-35             | 3-1/4" SQ.              | 50           | .020                    | 14A                             | 1                           | 18                        | 1420              | 1220  | 1110 | 980  | 870  | 750  | 640  | 570  | 470  | 370  |
| 1"        | C33                 | 3-1/4" SQ.              | 32           | .020                    | 14A                             | 1                           | 18                        | 1050              | 900   | 820  | 720  | 640  | 560  | 470  | 420  | 350  | 270  |
| 1"        | C34                 | 3-1/4" SQ.              | 40           | .020                    | 14A                             | 1                           | 18                        | 1190              | 1020  | 930  | 820  | 730  | 630  | 540  | 480  | 390  | 310  |
| 1"        | C35                 | 3-1/4" SQ.              | 50           | .020                    | 14A                             | 1                           | 18                        | 1430              | 1230  | 1120 | 990  | 870  | 760  | 640  | 570  | 470  | 370  |
| 1 1/4"    | C133                | 3-1/4" SQ.              | 32           | .020                    | 14A                             | 1                           | 18                        | 1010              | 870   | 790  | 700  | 620  | 540  | 450  | 400  | 330  | 260  |
| 1 1/4"    | C134                | 3-1/4" SQ.              | 40           | .020                    | 14A                             | 1                           | 18                        | 1120              | 960   | 870  | 770  | 680  | 590  | 500  | 450  | 370  | 290  |
| 1 1/4"    | C135                | 3-1/4" SQ.              | 50           | .020                    | 14A                             | 1                           | 18                        | 1340              | 1150  | 1050 | 920  | 820  | 710  | 600  | 540  | 440  | 350  |
| 3/4"      | C3/4-433            | 3-5/8" x 4-1/4"         | 32           | .020                    | 14B                             | 1                           | 18                        | 1405              | 1210  | 1100 | 970  | 860  | 740  | 630  | 560  | 460  | 370  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1490              | 1280  | 1160 | 1030 | 910  | 790  | 670  | 600  | 490  | 390  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2140              | 1840  | 1670 | 1480 | 1310 | 1130 | 960  | 860  | 710  | 560  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1565              | 1350  | 1220 | 1080 | 950  | 830  | 700  | 630  | 520  | 410  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2215              | 1900  | 1730 | 1530 | 1350 | 1170 | 1000 | 890  | 730  | 580  |
| 24B       | 3-6 CL              | 28                      | 2550         | 2190                    | 1990                            | 1760                        | 1560                      | 1350              | 1150  | 1020 | 840  | 660  |      |      |      |      |      |
| 3/4"      | C3/4-434            | 3-5/8" x 4-1/4"         | 40           | .020                    | 14B                             | 1                           | 18                        | 1690              | 1450  | 1320 | 1170 | 1030 | 900  | 760  | 680  | 560  | 440  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1790              | 1540  | 1400 | 1240 | 1090 | 950  | 810  | 720  | 590  | 470  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2490              | 2140  | 1940 | 1720 | 1520 | 1320 | 1120 | 1000 | 820  | 650  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1870              | 1610  | 1460 | 1290 | 1140 | 990  | 840  | 750  | 620  | 490  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2590              | 2230  | 2020 | 1790 | 1580 | 1370 | 1170 | 1040 | 850  | 670  |
| 24B       | 3-6 CL              | 28                      | 2950         | 2540                    | 2300                            | 2040                        | 1800                      | 1560              | 1330  | 1180 | 970  | 770  |      |      |      |      |      |
| 3/4"      | C3/4-435            | 3-5/8" x 4-1/4"         | 50           | .020                    | 14B                             | 1                           | 18                        | 1930              | 1660  | 1510 | 1330 | 1180 | 1020 | 870  | 770  | 640  | 500  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2110              | 1810  | 1650 | 1460 | 1290 | 1120 | 950  | 840  | 700  | 550  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2640              | 2270  | 2060 | 1820 | 1610 | 1400 | 1190 | 1060 | 870  | 690  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2210              | 1900  | 1720 | 1520 | 1350 | 1170 | 990  | 880  | 730  | 570  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2820              | 2430  | 2200 | 1950 | 1720 | 1490 | 1270 | 1130 | 930  | 730  |
| 24B       | 3-6 CL              | 28                      | 3190         | 2740                    | 2490                            | 2200                        | 1950                      | 1690              | 1440  | 1280 | 1050 | 830  |      |      |      |      |      |
| 1"        | C433                | 3-5/8" x 4-1/4"         | 32           | .020                    | 14B                             | 1                           | 18                        | 1560              | 1340  | 1220 | 1080 | 950  | 830  | 700  | 620  | 510  | 410  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1610              | 1380  | 1260 | 1110 | 980  | 850  | 720  | 640  | 530  | 420  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2480              | 2130  | 1930 | 1710 | 1510 | 1310 | 1120 | 990  | 820  | 640  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1650              | 1420  | 1290 | 1140 | 1010 | 870  | 740  | 660  | 540  | 430  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2560              | 2200  | 2000 | 1770 | 1560 | 1360 | 1150 | 1020 | 840  | 670  |
| 24B       | 3-6 CL              | 28                      | 2940         | 2530                    | 2290                            | 2030                        | 1790                      | 1560              | 1320  | 1180 | 970  | 760  |      |      |      |      |      |
| 1"        | C434                | 3-5/8" x 4-1/4"         | 40           | .020                    | 14B                             | 1                           | 18                        | 1770              | 1520  | 1380 | 1220 | 1080 | 940  | 800  | 710  | 580  | 460  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1880              | 1620  | 1470 | 1300 | 1150 | 1000 | 850  | 750  | 620  | 490  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2600              | 2240  | 2030 | 1790 | 1590 | 1380 | 1170 | 1040 | 860  | 680  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1950              | 1680  | 1520 | 1350 | 1190 | 1030 | 880  | 780  | 640  | 510  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2720              | 2340  | 2120 | 1880 | 1660 | 1440 | 1220 | 1090 | 900  | 710  |
| 24B       | 3-6 CL              | 28                      | 3100         | 2670                    | 2420                            | 2140                        | 1890                      | 1640              | 1400  | 1240 | 1020 | 810  |      |      |      |      |      |
| 1"        | C435                | 3-5/8" x 4-1/4"         | 50           | .020                    | 14B                             | 1                           | 18                        | 2030              | 1750  | 1580 | 1400 | 1240 | 1080 | 910  | 810  | 670  | 530  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2220              | 1910  | 1730 | 1530 | 1350 | 1180 | 1000 | 890  | 730  | 580  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2770              | 2380  | 2160 | 1910 | 1690 | 1470 | 1250 | 1110 | 910  | 720  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2330              | 2000  | 1820 | 1610 | 1420 | 1230 | 1050 | 930  | 770  | 610  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2970              | 2550  | 2320 | 2050 | 1810 | 1570 | 1340 | 1190 | 980  | 770  |
| 24B       | 3-6 CL              | 28                      | 3360         | 2890                    | 2620                            | 2320                        | 2050                      | 1780              | 1510  | 1340 | 1110 | 870  |      |      |      |      |      |
| 1-1/4"    | C1433               | 3-5/8" x 4-1/4"         | 32           | .020                    | 14B                             | 1                           | 18                        | 1530              | 1320  | 1190 | 1060 | 930  | 810  | 690  | 610  | 500  | 400  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1590              | 1370  | 1240 | 1100 | 970  | 840  | 720  | 640  | 520  | 410  |
|           |                     |                         |              |                         | 20B                             | 2 @ 6 CL                    | 24                        | 2470              | 2120  | 1930 | 1700 | 1510 | 1310 | 1110 | 990  | 820  | 640  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1630              | 1400  | 1270 | 1120 | 990  | 860  | 730  | 650  | 540  | 420  |
|           |                     |                         |              |                         | 24B                             | 2 @ 6 CL                    | 28                        | 2580              | 2220  | 2010 | 1780 | 1570 | 1370 | 1160 | 1030 | 850  | 670  |
| 24B       | 3 @ 6 CL            | 28                      | 2970         | 2550                    | 2320                            | 2050                        | 1810                      | 1570              | 1340  | 1190 | 980  | 770  |      |      |      |      |      |
| 1-1/4"    | C1434               | 3-5/8" x 4-1/4"         | 40           | .020                    | 14B                             | 1                           | 18                        | 1750              | 1510  | 1370 | 1210 | 1070 | 930  | 790  | 700  | 580  | 460  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1850              | 1590  | 1440 | 1280 | 1130 | 980  | 830  | 740  | 610  | 480  |
|           |                     |                         |              |                         | 20B                             | 2 @ 6 CL                    | 24                        | 2620              | 2250  | 2040 | 1810 | 1600 | 1390 | 1180 | 1050 | 860  | 680  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1920              | 1650  | 1500 | 1320 | 1170 | 1020 | 860  | 770  | 630  | 500  |
|           |                     |                         |              |                         | 24B                             | 2 @ 6 CL                    | 28                        | 2750              | 2370  | 2150 | 1900 | 1680 | 1460 | 1240 | 1100 | 910  | 720  |
| 24B       | 3 @ 6 CL            | 28                      | 3130         | 2690                    | 2440                            | 2160                        | 1910                      | 1660              | 1410  | 1250 | 1030 | 810  |      |      |      |      |      |
| 1-1/4"    | C1435               | 3-5/8" x 4-1/4"         | 50           | .020                    | 14B                             | 1                           | 18                        | 2040              | 1750  | 1590 | 1410 | 1240 | 1080 | 920  | 820  | 670  | 530  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2240              | 1930  | 1750 | 1550 | 1370 | 1190 | 1010 | 900  | 740  | 580  |
|           |                     |                         |              |                         | 20B                             | 2 @ 6 CL                    | 24                        | 2730              | 2350  | 2130 | 1880 | 1670 | 1450 | 1230 | 1090 | 900  | 710  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2380              | 2050  | 1860 | 1640 | 1450 | 1260 | 1070 | 950  | 790  | 620  |
|           |                     |                         |              |                         | 24B                             | 2 @ 6 CL                    | 28                        | 3000              | 2580  | 2340 | 2070 | 1830 | 1590 | 1350 | 1200 | 990  | 780  |
| 24B       | 3 @ 6 CL            | 28                      | 3390         | 2920                    | 2640                            | 2340                        | 2070                      | 1800              | 1530  | 1360 | 1120 | 880  |      |      |      |      |      |

# STYLE "JVA-RD / JVB-RD" VERSA-LINE

## COPPER/ALUMINUM ELEMENTS

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 DEPTH AND HEIGHT IN INCHES | TIERS AND CENTERS IN INCHES | MOUNTING 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"      | C3/4-43             | 4-1/4" SQ.              | 32           | .020                    | 14B                             | 1                           | 18                        | 1520              | 1310             | 1190 | 1050 | 930  | 810  | 680  | 610  | 500  | 400  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1615              | 1390             | 1260 | 1110 | 990  | 860  | 730  | 650  | 530  | 420  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2345              | 2020             | 1830 | 1620 | 1430 | 1240 | 1060 | 940  | 770  | 610  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1685              | 1450             | 1310 | 1160 | 1030 | 890  | 760  | 670  | 560  | 440  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2435              | 2090             | 1900 | 1680 | 1490 | 1290 | 1100 | 970  | 800  | 630  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 2800              | 2410             | 2180 | 1930 | 1710 | 1480 | 1260 | 1120 | 920  | 730  |   |  |  |  |  |  |  |  |  |  |
| 3/4"      | C3/4-44             | 4-1/4" SQ.              | 40           | .020                    | 14B                             | 1                           | 18                        | 2100              | 1810             | 1640 | 1450 | 1280 | 1110 | 950  | 840  | 690  | 550  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2250              | 1940             | 1760 | 1550 | 1370 | 1190 | 1010 | 900  | 740  | 590  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 3180              | 2730             | 2480 | 2190 | 1940 | 1690 | 1430 | 1270 | 1050 | 830  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2350              | 2020             | 1830 | 1620 | 1430 | 1250 | 1060 | 940  | 780  | 610  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 3270              | 2810             | 2550 | 2260 | 1990 | 1730 | 1470 | 1310 | 1080 | 850  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3730              | 3210             | 2910 | 2570 | 2280 | 1980 | 1680 | 1490 | 1230 | 970  |   |  |  |  |  |  |  |  |  |  |
| 3/4"      | C3/4-45             | 4-1/4" SQ.              | 50           | .020                    | 14B                             | 1                           | 18                        | 2210              | 1900             | 1720 | 1520 | 1350 | 1170 | 990  | 880  | 730  | 570  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2420              | 2080             | 1890 | 1670 | 1480 | 1280 | 1090 | 970  | 800  | 630  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 3200              | 2750             | 2500 | 2210 | 1950 | 1700 | 1440 | 1280 | 1060 | 830  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2550              | 2190             | 1990 | 1760 | 1560 | 1350 | 1150 | 1020 | 840  | 660  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 3380              | 2910             | 2640 | 2330 | 2060 | 1790 | 1520 | 1350 | 1120 | 880  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3820              | 3290             | 2980 | 2640 | 2330 | 2020 | 1720 | 1530 | 1260 | 990  |   |  |  |  |  |  |  |  |  |  |
| 1"        | C43                 | 4-1/4" SQ.              | 32           | .020                    | 14B                             | 1                           | 18                        | 1710              | 1470             | 1330 | 1180 | 1040 | 910  | 770  | 680  | 560  | 440  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1760              | 1510             | 1370 | 1210 | 1070 | 930  | 790  | 700  | 580  | 460  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2720              | 2340             | 2120 | 1880 | 1660 | 1440 | 1220 | 1090 | 900  | 710  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1810              | 1560             | 1410 | 1250 | 1100 | 960  | 810  | 720  | 600  | 470  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2810              | 2420             | 2190 | 1940 | 1710 | 1490 | 1260 | 1120 | 930  | 730  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3230              | 2780             | 2520 | 2230 | 1970 | 1710 | 1450 | 1290 | 1070 | 840  |   |  |  |  |  |  |  |  |  |  |
| 1"        | C44                 | 4-1/4" SQ.              | 40           | .020                    | 14B                             | 1                           | 18                        | 1940              | 1670             | 1510 | 1340 | 1180 | 1030 | 870  | 780  | 640  | 500  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2070              | 1780             | 1610 | 1430 | 1260 | 1100 | 930  | 830  | 680  | 540  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2850              | 2450             | 2220 | 1970 | 1740 | 1510 | 1280 | 1140 | 940  | 740  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2140              | 1840             | 1670 | 1480 | 1310 | 1130 | 960  | 860  | 710  | 560  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2990              | 2570             | 2330 | 2060 | 1820 | 1580 | 1350 | 1200 | 990  | 780  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3410              | 2930             | 2660 | 2350 | 2080 | 1810 | 1530 | 1360 | 1130 | 890  |   |  |  |  |  |  |  |  |  |  |
| 1"        | C45                 | 4-1/4" SQ.              | 50           | .020                    | 14B                             | 1                           | 18                        | 2220              | 1910             | 1730 | 1530 | 1350 | 1180 | 1000 | 890  | 730  | 580  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2430              | 2090             | 1900 | 1680 | 1480 | 1290 | 1090 | 970  | 800  | 630  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 3030              | 2610             | 2360 | 2090 | 1850 | 1610 | 1360 | 1210 | 1000 | 790  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2550              | 2190             | 1990 | 1760 | 1560 | 1350 | 1150 | 1020 | 840  | 660  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 3250              | 2800             | 2540 | 2240 | 1980 | 1720 | 1460 | 1300 | 1070 | 850  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3670              | 3160             | 2860 | 2530 | 2240 | 1950 | 1650 | 1470 | 1210 | 950  |   |  |  |  |  |  |  |  |  |  |
| 1-1/4"    | C143                | 4-1/4" SQ.              | 32           | .020                    | 14B                             | 1                           | 18                        | 1700              | 1460             | 1330 | 1170 | 1040 | 900  | 770  | 680  | 560  | 440  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1740              | 1500             | 1360 | 1200 | 1060 | 920  | 780  | 700  | 570  | 450  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2670              | 2300             | 2080 | 1840 | 1630 | 1420 | 1200 | 1070 | 880  | 690  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1780              | 1530             | 1390 | 1230 | 1090 | 940  | 800  | 710  | 590  | 460  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2720              | 2340             | 2120 | 1880 | 1660 | 1440 | 1220 | 1090 | 900  | 710  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3130              | 2690             | 2440 | 2160 | 1910 | 1660 | 1410 | 1250 | 1030 | 810  |   |  |  |  |  |  |  |  |  |  |
| 1-1/4"    | C144                | 4-1/4" SQ.              | 40           | .020                    | 14B                             | 1                           | 18                        | 1950              | 1680             | 1520 | 1350 | 1190 | 1030 | 880  | 780  | 640  | 510  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2090              | 1800             | 1630 | 1440 | 1270 | 1110 | 940  | 840  | 690  | 540  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2810              | 2420             | 2190 | 1940 | 1710 | 1490 | 1260 | 1120 | 930  | 730  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2160              | 1860             | 1680 | 1490 | 1320 | 1140 | 970  | 860  | 710  | 560  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2940              | 2530             | 2290 | 2030 | 1790 | 1560 | 1320 | 1180 | 970  | 760  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3350              | 2880             | 2610 | 2310 | 2040 | 1780 | 1510 | 1340 | 1110 | 870  |   |  |  |  |  |  |  |  |  |  |
| 1-1/4"    | C145                | 4-1/4" SQ.              | 50           | .020                    | 14B                             | 1                           | 18                        | 2100              | 1810             | 1640 | 1450 | 1280 | 1110 | 950  | 840  | 690  | 550  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 2300              | 1980             | 1790 | 1590 | 1400 | 1220 | 1040 | 920  | 760  | 600  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2940              | 2530             | 2290 | 2030 | 1790 | 1560 | 1320 | 1180 | 970  | 760  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 2380              | 2050             | 1860 | 1640 | 1450 | 1260 | 1070 | 950  | 790  | 620  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 3060              | 2630             | 2390 | 2110 | 1870 | 1620 | 1380 | 1220 | 1010 | 800  |   |  |  |  |  |  |  |  |  |  |
|           |                     |                         |              |                         | 24B                             | 3-6 CL                      | 28                        | 3460              | 2980             | 2700 | 2390 | 2110 | 1830 | 1560 | 1380 | 1140 | 900  |   |  |  |  |  |  |  |  |  |  |

Note: Copper tube furnished flared one end standard.

# STYLE "JVA-RD / JVB-RD" VERSA-LINE

## STEEL ELEMENTS

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

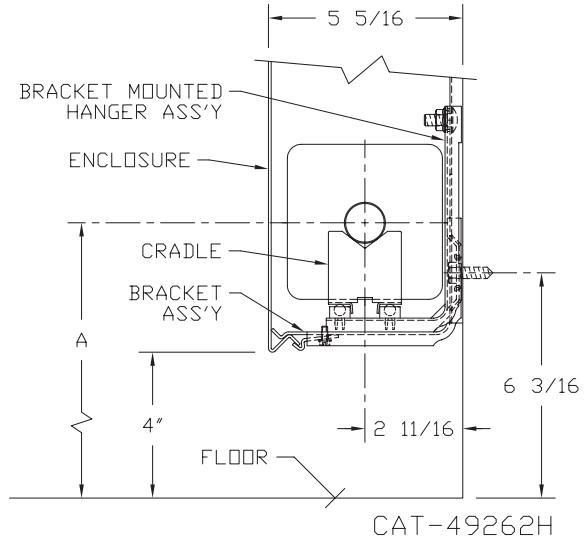
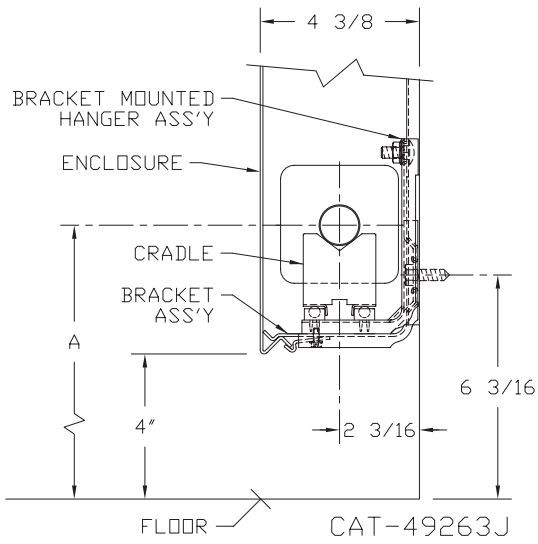
| TUBE SIZE | CATALOG DESIGNATION | FIN SIZE HEIGHT X WIDTH | FINS PER FT. | FIN THICKNESS IN INCHES | ENCL DEPTH AND HEIGHT IN INCHES | TIERS AND CENTERS IN INCHES | MOUNTING HEIGHT IN INCHES | STEAM 215° FACTOR | HOT WATER (AVG.)                                  |      |      |      |      |      |      |      |      |
|-----------|---------------------|-------------------------|--------------|-------------------------|---------------------------------|-----------------------------|---------------------------|-------------------|---|------|------|------|------|------|------|------|------|
|           |                     |                         |              |                         |                                 |                             |                           |                   | 200°  | 190° | 180° | 170° | 160° | 150° | 140° | 130° | 120° |
|           |                     |                         |              |                         |                                 |                             |                           |                   | CORRECTION FACTORS FOR AVERAGE WATER TEMPERATURES |      |      |      |      |      |      |      |      |
| 1"        | S33                 | 3-1/4" SQ.              | 32           | .032                    | 14A                             | 1                           | 18                        | 1000              | 0.86  | 0.78 | 0.69 | 0.61 | 0.53 | 0.45 | .40  | .33  | .26  |
| 1"        | S34                 | 3-1/4" SQ.              | 40           | .032                    | 14A                             | 1                           | 18                        | 1100              | 950   | 860  | 760  | 670  | 580  | 500  | 440  | 360  | 290  |
| 1"        | S35                 | 3-1/4" SQ.              | 50           | .032                    | 14A                             | 1                           | 18                        | 1170              | 1010  | 910  | 810  | 710  | 620  | 530  | 470  | 390  | 300  |
| 1-1/4"    | S133                | 3-1/4" SQ.              | 32           | .032                    | 14A                             | 1                           | 18                        | 990               | 850   | 770  | 680  | 600  | 520  | 450  | 400  | 330  | 260  |
| 1-1/4"    | S134                | 3-1/4" SQ.              | 40           | .032                    | 14A                             | 1                           | 18                        | 1120              | 960   | 870  | 770  | 680  | 590  | 500  | 450  | 370  | 290  |
| 1-1/4"    | S135                | 3-1/4" SQ.              | 50           | .032                    | 14A                             | 1                           | 18                        | 1150              | 990   | 900  | 790  | 700  | 610  | 520  | 460  | 380  | 300  |
| 1"        | S43                 | 4-1/4" SQ.              | 32           | .032                    | 14B                             | 1                           | 18                        | 1430              | 1230  | 1120 | 990  | 870  | 760  | 640  | 570  | 470  | 370  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1480              | 1270  | 1150 | 1020 | 900  | 780  | 670  | 590  | 490  | 380  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2215              | 1900  | 1730 | 1530 | 1350 | 1170 | 1000 | 890  | 730  | 580  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1520              | 1310  | 1190 | 1050 | 930  | 810  | 680  | 610  | 500  | 400  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2255              | 1940  | 1760 | 1560 | 1380 | 1200 | 1010 | 900  | 740  | 590  |
| 1"        | S44                 | 4-1/4" SQ.              | 40           | .032                    | 14B                             | 1                           | 18                        | 1605              | 1380  | 1250 | 1110 | 980  | 850  | 720  | 640  | 530  | 420  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1705              | 1470  | 1330 | 1180 | 1040 | 900  | 770  | 680  | 560  | 440  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2395              | 2060  | 1870 | 1650 | 1460 | 1270 | 1080 | 960  | 790  | 620  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1765              | 1520  | 1380 | 1220 | 1080 | 940  | 790  | 710  | 580  | 460  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2470              | 2120  | 1930 | 1700 | 1510 | 1310 | 1110 | 990  | 820  | 640  |
| 1"        | S45                 | 4-1/4" SQ.              | 50           | .032                    | 14B                             | 1                           | 18                        | 1680              | 1440  | 1310 | 1160 | 1020 | 890  | 760  | 670  | 550  | 440  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1785              | 1540  | 1390 | 1230 | 1090 | 950  | 800  | 710  | 590  | 460  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2455              | 2110  | 1910 | 1690 | 1500 | 1300 | 1100 | 980  | 810  | 640  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1850              | 1590  | 1440 | 1280 | 1130 | 980  | 830  | 740  | 610  | 480  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2535              | 2180  | 1980 | 1750 | 1550 | 1340 | 1140 | 1010 | 840  | 660  |
| 1-1/4"    | S143                | 4-1/4" SQ.              | 32           | .032                    | 14B                             | 1                           | 18                        | 1300              | 1120  | 1010 | 900  | 790  | 690  | 590  | 520  | 430  | 340  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1310              | 1130  | 1020 | 900  | 800  | 690  | 590  | 520  | 430  | 340  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2070              | 1780  | 1610 | 1430 | 1260 | 1100 | 930  | 830  | 680  | 540  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1320              | 1140  | 1030 | 910  | 810  | 700  | 590  | 530  | 440  | 340  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2120              | 1820  | 1650 | 1460 | 1290 | 1120 | 950  | 850  | 700  | 550  |
| 1-1/4"    | S144                | 4-1/4" SQ.              | 40           | .032                    | 14B                             | 1                           | 18                        | 1540              | 1320  | 1200 | 1060 | 940  | 820  | 690  | 620  | 510  | 400  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1620              | 1390  | 1260 | 1120 | 990  | 860  | 730  | 650  | 530  | 420  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2400              | 2060  | 1870 | 1660 | 1460 | 1270 | 1080 | 960  | 790  | 620  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1680              | 1440  | 1310 | 1160 | 1020 | 890  | 760  | 670  | 550  | 440  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2510              | 2160  | 1960 | 1730 | 1530 | 1330 | 1130 | 1000 | 830  | 650  |
| 1-1/4"    | S145                | 4-1/4" SQ.              | 50           | .032                    | 14B                             | 1                           | 18                        | 1670              | 1440  | 1300 | 1150 | 1020 | 890  | 750  | 670  | 550  | 430  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1775              | 1530  | 1380 | 1220 | 1080 | 940  | 800  | 710  | 590  | 460  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2405              | 2070  | 1880 | 1660 | 1470 | 1270 | 1080 | 960  | 790  | 630  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1835              | 1580  | 1430 | 1270 | 1120 | 970  | 830  | 730  | 610  | 480  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2485              | 2140  | 1940 | 1710 | 1520 | 1320 | 1120 | 990  | 820  | 650  |
| 2"        | S242                | 4-1/4" SQ.              | 25           | .032                    | 14B                             | 1                           | 18                        | 1230              | 1060  | 960  | 850  | 750  | 650  | 550  | 490  | 410  | 320  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1240              | 1070  | 970  | 860  | 760  | 660  | 560  | 500  | 410  | 320  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 1940              | 1670  | 1510 | 1340 | 1180 | 1030 | 870  | 780  | 640  | 500  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1250              | 1080  | 980  | 860  | 760  | 660  | 560  | 500  | 410  | 330  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2000              | 1720  | 1560 | 1380 | 1220 | 1060 | 900  | 800  | 660  | 520  |
| 2"        | S243                | 4-1/4" SQ.              | 32           | .032                    | 14B                             | 1                           | 18                        | 1420              | 1220  | 1110 | 980  | 870  | 750  | 640  | 570  | 470  | 370  |
|           |                     |                         |              |                         | 20B                             | 1                           | 24                        | 1460              | 1260  | 1140 | 1010 | 890  | 770  | 660  | 580  | 480  | 380  |
|           |                     |                         |              |                         | 20B                             | 2-6 CL                      | 24                        | 2140              | 1840  | 1670 | 1480 | 1310 | 1130 | 960  | 860  | 710  | 560  |
|           |                     |                         |              |                         | 24B                             | 1                           | 28                        | 1480              | 1270  | 1150 | 1020 | 900  | 780  | 670  | 590  | 490  | 380  |
|           |                     |                         |              |                         | 24B                             | 2-6 CL                      | 28                        | 2220              | 1910  | 1730 | 1530 | 1350 | 1180 | 1000 | 890  | 730  | 580  |
| 24B       | 3-6 CL              | 28                      | 2550         | 2190                    | 1990                            | 1760                        | 1560                      | 1350              | 1150  | 1020 | 840  | 660  |      |      |      |      |      |

- Notes: 1) Steel fins furnished as .032 thick, painted black.  
 2) NPT threads furnished on steel elements. Please use domestic fittings for proper installation.  
 3) The ends can be provided chamfered for field welded fittings when specified.

## Steam Bracket and BB Hanger

| ELEMENT TUBE SIZE | FIN SIZE HEIGHT x WIDTH | CRADLE NUMBER | A MIN  | A MAX |
|-------------------|-------------------------|---------------|--------|-------|
| 3/4 COPPER        | 3 1/4 x 3 1/4           | 2             | 7 3/8  | 9 5/8 |
| 1" COPPER         | 3 1/4 x 3 1/4           | 2             | 7 1/2  | 9 3/4 |
| 1 1/4 COPPER      | 3 1/4 x 3 1/4           | 2             | 7 5/8  | 9 7/8 |
| 1" STEEL          | 3 1/4 x 3 1/4           | 2             | 7 5/8  | 9 3/4 |
| 1 1/4 STEEL       | 3 1/4 x 3 1/4           | 1             | 7 3/16 | 9 3/8 |

| ELEMENT TUBE SIZE | FIN SIZE HEIGHT x WIDTH | CRADLE NUMBER | A MIN   | A MAX  |
|-------------------|-------------------------|---------------|---------|--------|
| 3/4 COPPER        | 3 5/8 x 4 1/4           | 2             | 7 3/8   | 8 3/4  |
|                   | 4 1/4 x 4 1/4           | 3A            | 7 11/16 | 9 1/16 |
| 1" COPPER         | 3 5/8 x 4 1/4           | 2             | 7 1/2   | 8 7/8  |
|                   | 4 1/4 x 4 1/4           |               |         |        |
| 1 1/4 COPPER      | 3 5/8 x 4 1/4           | 2             | 7 5/8   | 9"     |
|                   | 4 1/4 x 4 1/4           |               |         |        |
| 1" STEEL          | 4 1/4 x 4 1/4           | 2             | 7 5/8   | 9"     |
| 1 1/4 STEEL       | 4 1/4 x 4 1/4           | 2             | 7 7/8   | 9 1/4  |
| 2" STEEL          | 4 1/4 x 4 1/4           | 1             | 7 5/8   | 9"     |



# Design Data

## Correction Factor Chart for Non-Standard Mounting Heights

| MOUNTING HEIGHT (Inches) | ENCLOSURE STYLE    |              |                  |             |             |             |             |
|--------------------------|--------------------|--------------|------------------|-------------|-------------|-------------|-------------|
|                          | BARE FIN ALL SIZES | FRONT OUTLET | FT (FRONT & TOP) |             | SLOPE       |             |             |
|                          |                    |              | 3 1/4" FINS      | 4 1/4" FINS | 2 3/4" FINS | 3 1/4" FINS | 4 1/4" FINS |
| 40 or more               | 1.000              | 1.000        | 1.000            | 1.000       | 1.000       | 1.000       | 1.000       |
| 38                       | 1.000              | 1.000        | 1.000            | 1.000       | 1.000       | 1.000       | 1.003       |
| 36                       | 1.000              | 1.004        | 1.005            | 1.005       | 1.006       | 1.007       | 1.009       |
| 34                       | 1.010              | 1.014        | 1.011            | 1.010       | 1.012       | 1.013       | 1.016       |
| 32                       | 1.020              | 1.024        | 1.017            | 1.015       | 1.019       | 1.020       | 1.025       |
| 30                       | 1.030              | 1.039        | 1.029            | 1.024       | 1.031       | 1.033       | 1.039       |
| 29                       | 1.040              | 1.049        | 1.035            | 1.029       | 1.038       | 1.040       | 1.045       |
| 28                       | 1.050              | 1.059        | 1.041            | 1.034       | 1.045       | 1.047       | 1.052       |
| 27                       | 1.060              | 1.069        | 1.046            | 1.039       | 1.051       | 1.053       | 1.059       |
| 26                       | 1.070              | 1.079        | 1.052            | 1.044       | 1.058       | 1.060       | 1.065       |
| 25                       | 1.080              | 1.089        | 1.058            | 1.049       | 1.065       | 1.067       | 1.072       |
| 24                       | 1.090              | 1.099        | 1.064            | 1.054       | 1.071       | 1.073       | 1.079       |
| 23                       | 1.100              | 1.109        | 1.070            | 1.059       | 1.078       | 1.080       | 1.085       |
| 22                       | 1.110              | 1.119        | 1.076            | 1.064       | 1.085       | 1.087       | 1.092       |
| 21                       | 1.120              | 1.129        | 1.082            | 1.069       | 1.091       | 1.093       | 1.099       |
| 20                       | 1.130              | 1.139        | 1.088            | 1.074       | 1.098       | 1.100       | 1.100       |
| 19                       | 1.140              | 1.149        | 1.089            | 1.075       | 1.100       | 1.100       | 1.100       |
| 18 or less               | 1.150              | 1.150        | 1.089            | 1.075       | 1.100       | 1.100       | 1.100       |

**TOP OUTLET "T" IS NOT AFFECTED.**

The AHRI Ratings cataloged include the factor shown for the recommended mounting height.

If the unit is to be installed at a different height than that recommended, the AHRI Rating (except for Top Outlet) must be adjusted as follows: AHRI Rating multiplied by

$$\frac{\text{Factor from Table Above for actual mounting height}}{\text{Factor from Table Above for recommended mounting height}}$$

**FORMULA:**

$$\text{Catalog Rating} \times \frac{\text{Factor at 30" Height}}{\text{Factor at 18" Height}}$$

$$\text{SOLUTION: } 1950 \times \frac{1.039}{1.150} = 1760 \text{ BTU/Hr.}$$

**DYNAMIC FORMULAS**

$$\text{BTU} = \text{GPM} \times 500 \times \text{TD}$$

$$\text{GPM} = \left( \frac{\text{BTU}}{500} \right) \div \text{TD}$$

$$\text{TD} = \left( \frac{\text{BTU}}{500} \right) \div \text{GPM}$$

# Design Data

## COMMERCIAL FINNED TUBE RATING CORRECTION CHARTS

CATALOG FINNED TUBE RATINGS ARE BASED UPON THE FOLLOWING CONDITIONS:

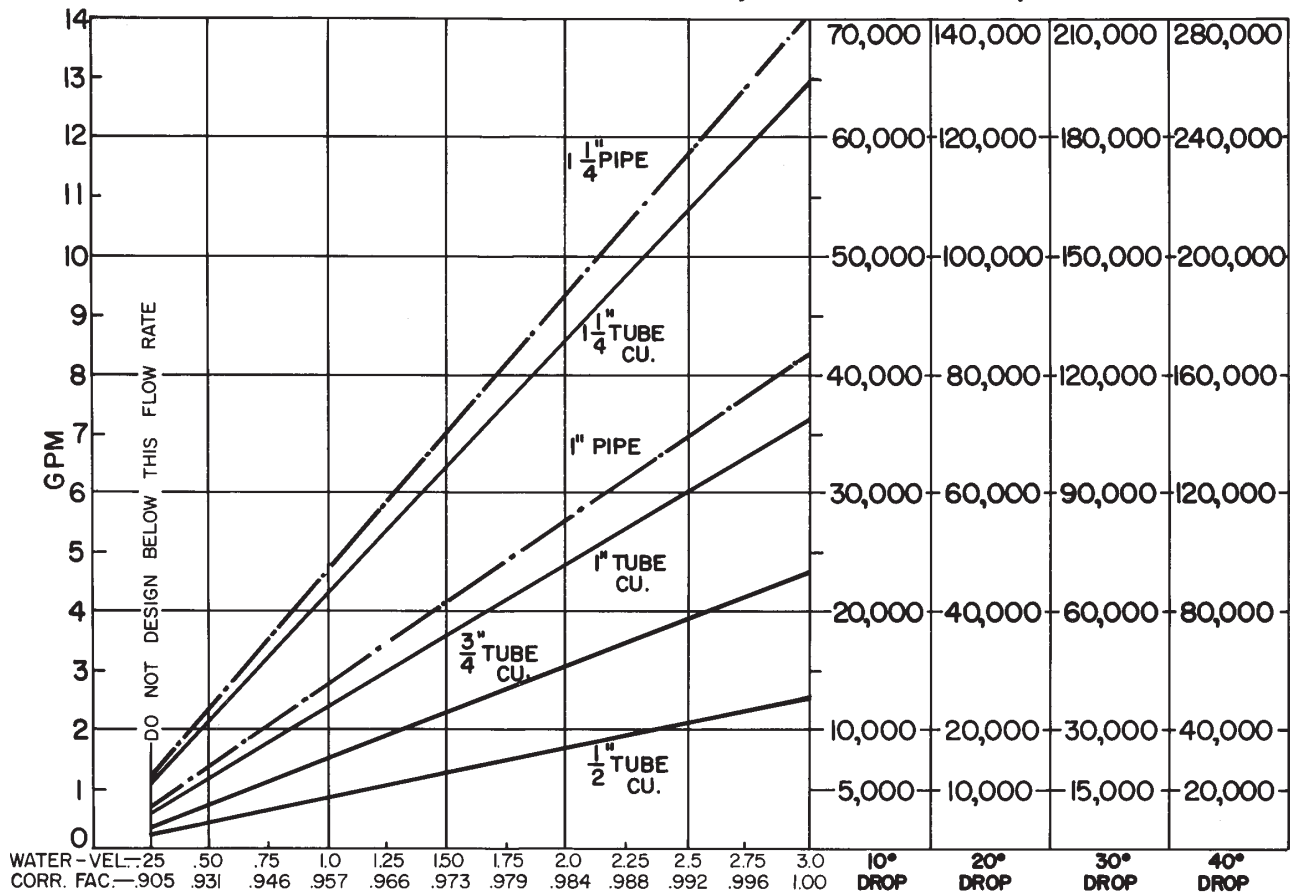
- 215°F AVERAGE WATER OR STEAM TEMPERATURE
- 65°F ENTERING AIR TEMPERATURE
- 3 FEET PER SECOND WATER FLOW RATE
- CATALOG MOUNTING HEIGHT

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

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

USE THE FOLLOWING CHARTS TO SELECT CORRECTION FACTORS

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

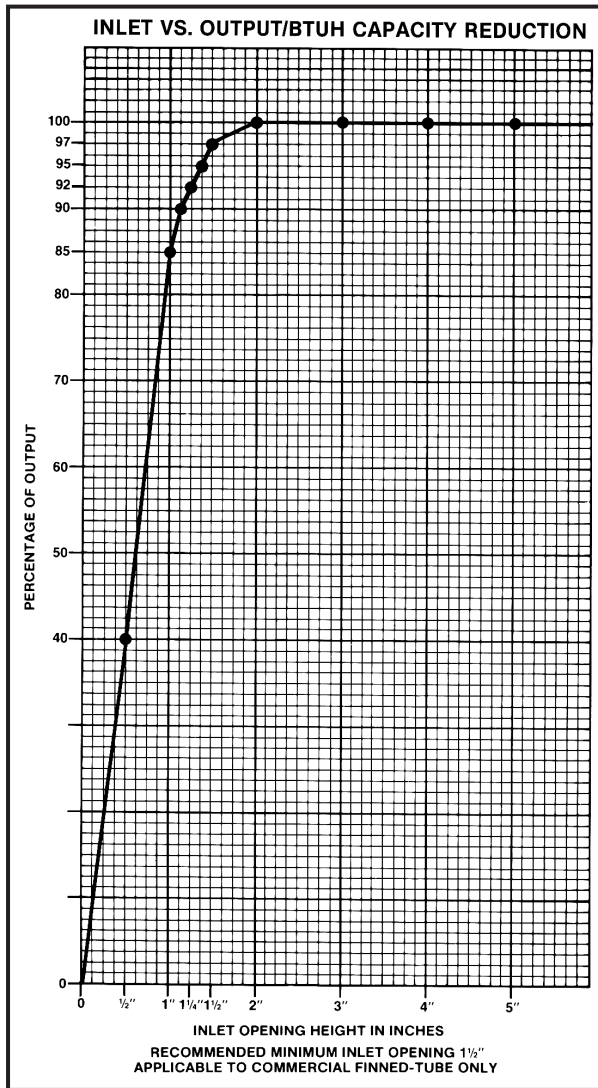


|                   |      |      |      |      |      |      |      |      |      |      |      |     |     |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|
| 1/2" COP. ALUM.   | 1.80 | 2.33 | 5.33 | 9.16 |      |      |      |      |      |      |      |     |     |
| 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 | 2.91 | 3.3  |     |     |
| 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

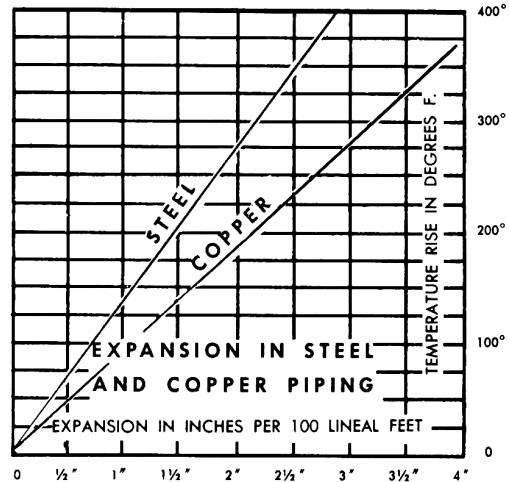
- 1" IPS — 780 AT TEMPERATURES UP TO 650°F.
  - 1 1/4" IPS — 660 AT TEMPERATURES UP TO 650°F.
  - 2" IPS — 405 AT TEMPERATURES UP TO 650°F.
  - 1 1/4" CU — 194 AT TEMPERATURES UP TO 300°F.
  - 1" CU — 204 AT TEMPERATURES UP TO 300°F.
  - 3/4" CU — 218 PSI AT TEMPERATURES UP TO 300°F.
- MAXIMUM PRESSURES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

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

| PIPE WATER CAPACITIES AND QUANTITIES<br>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               |



# Design Data

## 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 |