

# BAL-24

Linear Active Chilled Beam



## PERFORMANCE DATA | 4 - PIPE COOLING

| NOMINAL LENGTH<br>ft | NOZZLE SIZE | PRIMARY AIR |           |                       | SOUND | COIL SENSIBLE COOLING (Btu/h) |       |         |       |         |       |         |       | INDUCTION RATIO | THROW      |              |
|----------------------|-------------|-------------|-----------|-----------------------|-------|-------------------------------|-------|---------|-------|---------|-------|---------|-------|-----------------|------------|--------------|
|                      |             | INLET DIA.  | FLOW RATE | INLET ΔPs             |       | 1.0 GPM                       |       | 1.5 GPM |       | 2.0 GPM |       | 2.5 GPM |       |                 |            |              |
|                      |             | in          | CFM       | (in H <sub>2</sub> O) |       | NC                            | TOTAL | ΔP COIL | TOTAL | ΔP COIL | TOTAL | ΔP COIL | TOTAL |                 |            | ΔP COIL      |
| 4                    | M13         | 4           | 15        | 0.20                  | 15    | 1357                          | 2.90  | 6.40    | 1412  | 6.40    | 1455  | 1.50    | 1471  | 2.30            | 6.1        | 0 - 1 - 4    |
|                      |             |             | 20        | 0.35                  | 17    | 1745                          |       |         | 1830  |         | 1897  |         | 1925  |                 |            | 1 - 2 - 7    |
|                      |             |             | 25        | 0.55                  | 20    | 2035                          |       |         | 2143  |         | 2208  |         | 2248  |                 |            | 1 - 3 - 10   |
|                      | M17         | 4           | 20        | 0.18                  | 16    | 1419                          |       |         | 1484  |         | 1537  |         | 1556  |                 | 4.8        | 1 - 1 - 5    |
|                      |             |             | 30        | 0.40                  | 21    | 1929                          |       |         | 2029  |         | 2093  |         | 2129  |                 |            | 1 - 3 - 10   |
|                      |             |             | 40        | 0.71                  | 25    | 2460                          |       |         | 2608  |         | 2725  |         | 2785  |                 |            | 2 - 5 - 14   |
|                      | M23         | 5           | 40        | 0.21                  | 20    | 1703                          |       |         | 1799  |         | 1850  |         | 1885  |                 | 3.9        | 2 - 4 - 12   |
|                      |             |             | 60        | 0.48                  | 26    | 2518                          |       |         | 2693  |         | 2834  |         | 2910  |                 |            | 4 - 8 - 18   |
|                      |             |             | 75        | 0.75                  | 29    | 3069                          |       |         | 3317  |         | 3459  |         | 3570  |                 |            | 7 - 12 - 21  |
|                      | M31         | 6           | 70        | 0.18                  | 20    | 1923                          |       |         | 2035  |         | 2109  |         | 2153  |                 | 2.6        | 2 - 6 - 14   |
|                      |             |             | 105       | 0.41                  | 25    | 2847                          |       |         | 3061  |         | 3206  |         | 3299  |                 |            | 6 - 11 - 20  |
|                      |             |             | 140       | 0.74                  | 31    | 3528                          |       |         | 3831  |         | 3987  |         | 4131  |                 |            | 10 - 14 - 23 |
| 6                    | M13         | 4           | 20        | 0.15                  | 15    | 1926                          | 4.10  | 9.30    | 2044  | 2.10    | 2051  | 3.30    | 2080  | 6.1             | 0 - 1 - 4  |              |
|                      |             |             | 30        | 0.34                  | 18    | 2457                          |       |         | 2609  |         | 2693  |         | 2748  |                 | 1 - 2 - 9  |              |
|                      |             |             | 40        | 0.61                  | 22    | 3073                          |       |         | 3316  |         | 3406  |         | 3495  |                 | 2 - 4 - 13 |              |
|                      | M17         | 5           | 30        | 0.17                  | 17    | 2051                          |       |         | 2171  |         | 2227  |         | 2265  |                 | 4.8        | 1 - 2 - 6    |
|                      |             |             | 45        | 0.39                  | 23    | 2783                          |       |         | 2986  |         | 3059  |         | 3132  |                 |            | 2 - 3 - 12   |
|                      |             |             | 60        | 0.69                  | 26    | 3632                          |       |         | 3939  |         | 4094  |         | 4221  |                 |            | 3 - 6 - 17   |
|                      | M23         | 6           | 60        | 0.21                  | 22    | 2469                          |       |         | 2666  |         | 2740  |         | 2813  |                 | 3.9        | 2 - 5 - 14   |
|                      |             |             | 90        | 0.48                  | 27    | 3779                          |       |         | 4109  |         | 4334  |         | 4497  |                 |            | 5 - 10 - 21  |
|                      |             |             | 110       | 0.71                  | 30    | 4223                          |       |         | 4602  |         | 4895  |         | 5108  |                 |            | 8 - 13 - 24  |
|                      | M31         | 8 *         | 105       | 0.19                  | 21    | 2783                          |       |         | 3016  |         | 3113  |         | 3203  |                 | 2.6        | 3 - 7 - 18   |
|                      |             |             | 160       | 0.43                  | 27    | 4161                          |       |         | 4525  |         | 4794  |         | 4988  |                 |            | 7 - 13 - 25  |
|                      |             |             | 210       | 0.74                  | 31    | 4744                          |       |         | 5338  |         | 5676  |         | 5958  |                 |            | 12 - 18 - 29 |
| 8                    | M13         | 4           | 25        | 0.14                  | 15    | 2543                          | 5.40  | 1.60    | 2729  | 2.80    | 2799  | 4.30    | 2847  | 6.1             | 0 - 1 - 4  |              |
|                      |             |             | 40        | 0.36                  | 20    | 3432                          |       |         | 3694  |         | 3836  |         | 3937  |                 | 1 - 2 - 10 |              |
|                      |             |             | 55        | 0.67                  | 25    | 4022                          |       |         | 4395  |         | 4582  |         | 4741  |                 | 2 - 5 - 16 |              |
|                      | M17         | 5           | 40        | 0.18                  | 19    | 3003                          |       |         | 3228  |         | 3333  |         | 3406  |                 | 4.8        | 1 - 2 - 7    |
|                      |             |             | 60        | 0.40                  | 24    | 3671                          |       |         | 3974  |         | 4151  |         | 4281  |                 |            | 2 - 4 - 14   |
|                      |             |             | 80        | 0.70                  | 28    | 4632                          |       |         | 5098  |         | 5358  |         | 5571  |                 |            | 3 - 7 - 19   |
|                      | M23         | 8 *         | 80        | 0.22                  | 24    | 3097                          |       |         | 3380  |         | 3526  |         | 3646  |                 | 3.9        | 2 - 5 - 16   |
|                      |             |             | 120       | 0.49                  | 29    | 4614                          |       |         | 5128  |         | 5485  |         | 5746  |                 |            | 5 - 12 - 25  |
|                      |             |             | 140       | 0.67                  | 31    | 4976                          |       |         | 5648  |         | 6092  |         | 6417  |                 |            | 8 - 15 - 28  |
|                      | M31         | 10 *        | 145       | 0.20                  | 24    | 3563                          |       |         | 3916  |         | 4098  |         | 4253  |                 | 2.6        | 4 - 8 - 21   |
|                      |             |             | 215       | 0.45                  | 29    | 5061                          |       |         | 5711  |         | 6145  |         | 6462  |                 |            | 8 - 16 - 29  |
|                      |             |             | 260       | 0.66                  | 34    | 5612                          |       |         | 6429  |         | 6964  |         | 7379  |                 |            | 14 - 20 - 32 |
| 10                   | M13         | 5           | 35        | 0.17                  | 16    | 3394                          | 6.70  | 1.90    | 3697  | 3.40    | 3823  | 5.30    | 3913  | 6.1             | 1 - 1 - 5  |              |
|                      |             |             | 50        | 0.35                  | 21    | 4133                          |       |         | 4533  |         | 4746  |         | 4897  |                 | 1 - 3 - 12 |              |
|                      |             |             | 70        | 0.69                  | 25    | 4804                          |       |         | 5379  |         | 5670  |         | 5911  |                 | 2 - 5 - 18 |              |
|                      | M17         | 6           | 55        | 0.22                  | 21    | 3807                          |       |         | 4155  |         | 4333  |         | 4458  |                 | 4.8        | 1 - 2 - 9    |
|                      |             |             | 80        | 0.46                  | 26    | 4384                          |       |         | 4895  |         | 5163  |         | 5370  |                 |            | 2 - 5 - 17   |
|                      |             |             | 100       | 0.71                  | 29    | 5335                          |       |         | 6009  |         | 6389  |         | 6696  |                 |            | 4 - 9 - 22   |
|                      | M23         | 8 *         | 100       | 0.23                  | 25    | 3569                          |       |         | 3991  |         | 4208  |         | 4382  |                 | 3.9        | 3 - 6 - 18   |
|                      |             |             | 150       | 0.51                  | 31    | 5289                          |       |         | 6028  |         | 6538  |         | 6912  |                 |            | 6 - 13 - 28  |
|                      |             |             | 180       | 0.73                  | 33    | 5708                          |       |         | 6694  |         | 7344  |         | 7825  |                 |            | 9 - 17 - 32  |
|                      | M31         | 10 *        | 180       | 0.22                  | 26    | 4082                          |       |         | 4585  |         | 4847  |         | 5068  |                 | 2.6        | 4 - 9 - 23   |
|                      |             |             | 240       | 0.39                  | 31    | 5483                          |       |         | 6249  |         | 6778  |         | 7165  |                 |            | 7 - 15 - 30  |
|                      |             |             | 300       | 0.61                  | 40    | 6000                          |       |         | 7103  |         | 7812  |         | 8339  |                 |            | 11 - 19 - 34 |

NOTES: Reference page C3-10 for operational conditions used for performance notes.

## PERFORMANCE DATA | 4 - PIPE HEATING

| NOMINAL LENGTH<br>ft | NOZZLE SIZE | PRIMARY AIR |           |                       | SOUND | COIL HEATING (Btu/h) |         |         |         |         |         |         |         | INDUCTION RATIO | THROW        |
|----------------------|-------------|-------------|-----------|-----------------------|-------|----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------|--------------|
|                      |             | INLET DIA.  | FLOW RATE | INLET ΔPs             |       | 0.5 GPM              |         | 1.0 GPM |         | 1.5 GPM |         | 2.0 GPM |         |                 |              |
|                      |             | in          | CFM       | (in H <sub>2</sub> O) |       | TOTAL                | ΔP COIL | TOTAL   | ΔP COIL | TOTAL   | ΔP COIL | TOTAL   | ΔP COIL |                 |              |
| 4                    | M13         | 4           | 15        | 0.2                   | 15    | 2108                 | 0.20    | 2485    | 0.60    | 2586    | 1.40    | 2664    | 2.50    | 6.1             | 0 - 1 - 4    |
|                      |             |             | 20        | 0.35                  | 17    | 2663                 |         | 3196    |         | 3350    |         | 3473    |         |                 | 1 - 2 - 7    |
|                      |             |             | 25        | 0.55                  | 20    | 3061                 |         | 3725    |         | 3923    |         | 4043    |         |                 | 1 - 3 - 10   |
|                      | M17         | 4           | 20        | 0.18                  | 16    | 2193                 |         | 2598    |         | 2716    |         | 2814    |         | 4.8             | 1 - 1 - 5    |
|                      |             |             | 30        | 0.4                   | 21    | 2906                 |         | 3531    |         | 3715    |         | 3831    |         |                 | 1 - 3 - 10   |
|                      |             |             | 40        | 0.71                  | 25    | 3549                 |         | 4503    |         | 4776    |         | 4999    |         |                 | 2 - 5 - 14   |
|                      | M23         | 5           | 40        | 0.21                  | 20    | 2548                 |         | 3118    |         | 3295    |         | 3387    |         | 3.9             | 2 - 4 - 12   |
|                      |             |             | 60        | 0.48                  | 26    | 3592                 |         | 4611    |         | 4930    |         | 5188    |         |                 | 4 - 8 - 18   |
|                      |             |             | 75        | 0.75                  | 29    | 4500                 |         | 5618    |         | 6073    |         | 6334    |         |                 | 7 - 12 - 21  |
|                      | M31         | 6           | 70        | 0.18                  | 20    | 2826                 |         | 3520    |         | 3727    |         | 3862    |         | 2.6             | 2 - 6 - 14   |
|                      |             |             | 105       | 0.41                  | 25    | 4136                 |         | 5212    |         | 5605    |         | 5870    |         |                 | 6 - 11 - 20  |
|                      |             |             | 140       | 0.74                  | 31    | 5007                 |         | 6459    |         | 7015    |         | 7300    |         |                 | 10 - 14 - 23 |
| 6                    | M13         | 4           | 20        | 0.15                  | 15    | 2905                 | 0.20    | 3526    | 0.90    | 3743    | 2.10    | 3755    | 3.70    | 6.1             | 0 - 1 - 4    |
|                      |             |             | 30        | 0.34                  | 18    | 3585                 |         | 4500    |         | 4778    |         | 4931    |         |                 | 1 - 2 - 9    |
|                      |             |             | 40        | 0.61                  | 22    | 4400                 |         | 5627    |         | 6071    |         | 6236    |         |                 | 2 - 4 - 13   |
|                      | M17         | 5           | 30        | 0.17                  | 17    | 3036                 |         | 3756    |         | 3974    |         | 4078    |         | 4.8             | 1 - 2 - 6    |
|                      |             |             | 45        | 0.39                  | 23    | 4020                 |         | 5095    |         | 5467    |         | 5601    |         |                 | 2 - 3 - 12   |
|                      |             |             | 60        | 0.69                  | 26    | 5123                 |         | 6649    |         | 7212    |         | 7496    |         |                 | 3 - 6 - 17   |
|                      | M23         | 6           | 60        | 0.21                  | 22    | 3529                 |         | 4520    |         | 4882    |         | 5017    |         | 3.9             | 2 - 5 - 14   |
|                      |             |             | 90        | 0.48                  | 27    | 5241                 |         | 6920    |         | 7523    |         | 7936    |         |                 | 5 - 10 - 21  |
|                      |             |             | 110       | 0.71                  | 30    | 5744                 |         | 7733    |         | 8427    |         | 8962    |         |                 | 8 - 13 - 24  |
|                      | M31         | 8 *         | 105       | 0.19                  | 21    | 3948                 |         | 5095    |         | 5521    |         | 5701    |         | 2.6             | 3 - 7 - 18   |
|                      |             |             | 160       | 0.43                  | 27    | 5703                 |         | 7618    |         | 8266    |         | 8778    |         |                 | 7 - 13 - 25  |
|                      |             |             | 210       | 0.74                  | 31    | 6552                 |         | 8686    |         | 9774    |         | 10393   |         |                 | 12 - 18 - 29 |
| 8                    | M13         | 4           | 25        | 0.14                  | 15    | 3811                 | 0.30    | 4656    | 1.20    | 4997    | 2.70    | 5125    | 4.80    | 6.1             | 0 - 1 - 4    |
|                      |             |             | 40        | 0.36                  | 20    | 4870                 |         | 6283    |         | 6764    |         | 7025    |         |                 | 1 - 2 - 10   |
|                      |             |             | 55        | 0.67                  | 25    | 5514                 |         | 7365    |         | 8047    |         | 8390    |         |                 | 2 - 5 - 16   |
|                      | M17         | 5           | 40        | 0.18                  | 19    | 4377                 |         | 5499    |         | 5910    |         | 6102    |         | 4.8             | 1 - 2 - 7    |
|                      |             |             | 60        | 0.4                   | 24    | 5044                 |         | 6722    |         | 7277    |         | 7600    |         |                 | 2 - 4 - 14   |
|                      |             |             | 80        | 0.7                   | 28    | 6339                 |         | 8481    |         | 9333    |         | 9811    |         |                 | 3 - 7 - 19   |
|                      | M23         | 8 *         | 80        | 0.22                  | 24    | 4247                 |         | 5671    |         | 6190    |         | 6455    |         | 3.9             | 2 - 5 - 16   |
|                      |             |             | 120       | 0.49                  | 29    | 6267                 |         | 8448    |         | 9390    |         | 10043   |         |                 | 5 - 12 - 25  |
|                      |             |             | 140       | 0.67                  | 31    | 6659                 |         | 9111    |         | 10341   |         | 11154   |         |                 | 8 - 15 - 28  |
|                      | M31         | 10 *        | 145       | 0.2                   | 24    | 4878                 |         | 6524    |         | 7170    |         | 7503    |         | 2.6             | 4 - 8 - 21   |
|                      |             |             | 215       | 0.45                  | 29    | 6798                 |         | 9266    |         | 10456   |         | 11252   |         |                 | 8 - 16 - 29  |
|                      |             |             | 260       | 0.66                  | 34    | 7350                 |         | 10275   |         | 11772   |         | 12752   |         |                 | 14 - 20 - 32 |
| 10                   | M13         | 5           | 35        | 0.17                  | 16    | 4882                 | 0.40    | 6215    | 1.50    | 6769    | 3.40    | 7000    | 6.00    | 6.1             | 1 - 1 - 5    |
|                      |             |             | 50        | 0.35                  | 21    | 5707                 |         | 7567    |         | 8299    |         | 8689    |         |                 | 1 - 3 - 12   |
|                      |             |             | 70        | 0.69                  | 25    | 6350                 |         | 8797    |         | 9848    |         | 10381   |         |                 | 2 - 5 - 18   |
|                      | M17         | 6           | 55        | 0.22                  | 21    | 5289                 |         | 6971    |         | 7607    |         | 7933    |         | 4.8             | 1 - 2 - 9    |
|                      |             |             | 80        | 0.46                  | 26    | 5928                 |         | 8027    |         | 8963    |         | 9453    |         |                 | 2 - 5 - 17   |
|                      |             |             | 100       | 0.71                  | 29    | 6852                 |         | 9769    |         | 11003   |         | 11699   |         |                 | 4 - 9 - 22   |
|                      | M23         | 8 *         | 100       | 0.23                  | 25    | 4764                 |         | 6534    |         | 7307    |         | 7705    |         | 3.9             | 3 - 6 - 18   |
|                      |             |             | 150       | 0.51                  | 31    | 6618                 |         | 9685    |         | 11037   |         | 11971   |         |                 | 6 - 13 - 28  |
|                      |             |             | 180       | 0.73                  | 33    | 7158                 |         | 10452   |         | 12257   |         | 13446   |         |                 | 10 - 17 - 32 |
|                      | M31         | 10 *        | 180       | 0.22                  | 26    | 5285                 |         | 7475    |         | 8395    |         | 8874    |         | 2.6             | 4 - 9 - 23   |
|                      |             |             | 240       | 0.39                  | 31    | 6861                 |         | 10040   |         | 11443   |         | 12410   |         |                 | 7 - 15 - 30  |
|                      |             |             | 300       | 0.61                  | 40    | 7552                 |         | 11039   |         | 13005   |         | 14304   |         |                 | 11 - 19 - 34 |

NOTES: Reference page C3-10 for operational conditions used for performance notes.

# BAL-24

Linear Active Chilled Beam



## PERFORMANCE DATA | 2 - PIPE COOLING

| NOMINAL<br>LENGTH<br>ft | NOZZLE<br>SIZE | PRIMARY AIR |           |                       | SOUND | COIL SENSIBLE COOLING (Btu/h) |         |         |         |         |         |         |         | INDUCTION<br>RATIO | THROW        |
|-------------------------|----------------|-------------|-----------|-----------------------|-------|-------------------------------|---------|---------|---------|---------|---------|---------|---------|--------------------|--------------|
|                         |                | INLET DIA.  | FLOW RATE | INLET ΔPs             |       | 1.0 GPM                       |         | 1.5 GPM |         | 2.0 GPM |         | 2.5 GPM |         |                    |              |
|                         |                |             |           |                       |       | TOTAL                         | ΔP COIL | TOTAL   | ΔP COIL | TOTAL   | ΔP COIL | TOTAL   | ΔP COIL |                    |              |
|                         |                | in          | CFM       | (in H <sub>2</sub> O) | NC    |                               |         |         |         |         |         |         |         |                    |              |
| 4                       | M13            | 4           | 15        | 0.20                  | 15    | 1447                          | 3.80    | 1506    | 8.60    | 1552    | 1.90    | 1569    | 3.00    | 6.1                | 0 - 1 - 4    |
|                         |                |             | 20        | 0.35                  | 17    | 1862                          |         | 1952    |         | 2023    |         | 2053    |         |                    | 1 - 2 - 7    |
|                         |                |             | 25        | 0.55                  | 20    | 2170                          |         | 2286    |         | 2355    |         | 2398    |         |                    | 1 - 3 - 10   |
|                         | M17            | 4           | 20        | 0.18                  | 16    | 1514                          |         | 1583    |         | 1640    |         | 1660    |         | 4.8                | 1 - 1 - 5    |
|                         |                |             | 30        | 0.40                  | 21    | 2057                          |         | 2164    |         | 2232    |         | 2271    |         |                    | 1 - 3 - 10   |
|                         |                |             | 40        | 0.71                  | 25    | 2624                          |         | 2782    |         | 2906    |         | 2971    |         |                    | 2 - 5 - 14   |
|                         | M23            | 5           | 40        | 0.21                  | 20    | 1816                          |         | 8.6     |         | 1973    |         | 2011    |         | 3.9                | 2 - 4 - 12   |
|                         |                |             | 60        | 0.48                  | 26    | 2686                          |         | 2872    |         | 3023    |         | 3104    |         |                    | 4 - 8 - 18   |
|                         |                |             | 75        | 0.75                  | 29    | 3273                          |         | 3538    |         | 3690    |         | 3808    |         |                    | 7 - 12 - 21  |
|                         | M31            | 6           | 70        | 0.18                  | 20    | 2051                          |         | 2171    |         | 2250    |         | 2296    |         | 2.6                | 2 - 6 - 14   |
|                         |                |             | 105       | 0.41                  | 25    | 3036                          |         | 3265    |         | 3420    |         | 3518    |         |                    | 6 - 11 - 20  |
|                         |                |             | 140       | 0.74                  | 31    | 3763                          |         | 4087    |         | 4253    |         | 4406    |         |                    | 10 - 14 - 23 |
| 6                       | M13            | 4           | 20        | 0.15                  | 15    | 2054                          | 5.50    | 2181    | 1.60    | 2188    | 2.80    | 2219    | 4.40    | 6.1                | 0 - 1 - 4    |
|                         |                |             | 30        | 0.34                  | 18    | 2621                          |         | 2783    |         | 2872    |         | 2931    |         |                    | 1 - 2 - 9    |
|                         |                |             | 40        | 0.61                  | 22    | 3278                          |         | 3537    |         | 3633    |         | 3728    |         |                    | 2 - 4 - 13   |
|                         | M17            | 5           | 30        | 0.17                  | 17    | 2188                          |         | 2315    |         | 2376    |         | 2417    |         | 4.8                | 1 - 2 - 6    |
|                         |                |             | 45        | 0.39                  | 23    | 2968                          |         | 3185    |         | 3263    |         | 3341    |         |                    | 2 - 3 - 12   |
|                         |                |             | 60        | 0.69                  | 26    | 3874                          |         | 4201    |         | 4367    |         | 4502    |         |                    | 3 - 6 - 17   |
|                         | M23            | 6           | 60        | 0.21                  | 22    | 2633                          |         | 2844    |         | 2923    |         | 3000    |         | 3.9                | 2 - 5 - 14   |
|                         |                |             | 90        | 0.48                  | 27    | 4031                          |         | 4383    |         | 4623    |         | 4797    |         |                    | 5 - 10 - 21  |
|                         |                |             | 110       | 0.71                  | 30    | 4505                          |         | 4909    |         | 5221    |         | 5448    |         |                    | 8 - 14 - 26  |
|                         | M31            | 8 *         | 105       | 0.19                  | 21    | 2968                          |         | 3217    |         | 3321    |         | 3416    |         | 2.6                | 3 - 7 - 18   |
|                         |                |             | 160       | 0.43                  | 27    | 4438                          |         | 4827    |         | 5114    |         | 5321    |         |                    | 7 - 13 - 25  |
|                         |                |             | 210       | 0.74                  | 31    | 5060                          |         | 5694    |         | 6055    |         | 6356    |         |                    | 12 - 18 - 29 |
| 8                       | M13            | 4           | 25        | 0.14                  | 15    | 2713                          | 7.20    | 2911    | 2.10    | 2986    | 3.70    | 3037    | 5.70    | 6.1                | 0 - 1 - 4    |
|                         |                |             | 40        | 0.36                  | 20    | 3660                          |         | 3940    |         | 4092    |         | 4200    |         |                    | 1 - 2 - 10   |
|                         |                |             | 55        | 0.67                  | 25    | 4290                          |         | 4688    |         | 4888    |         | 5057    |         |                    | 2 - 5 - 16   |
|                         | M17            | 5           | 40        | 0.18                  | 19    | 3203                          |         | 3443    |         | 3555    |         | 3633    |         | 4.8                | 1 - 2 - 7    |
|                         |                |             | 60        | 0.40                  | 24    | 3916                          |         | 4239    |         | 4428    |         | 4566    |         |                    | 2 - 4 - 14   |
|                         |                |             | 80        | 0.70                  | 28    | 4941                          |         | 5437    |         | 5716    |         | 5943    |         |                    | 3 - 7 - 19   |
|                         | M23            | 8 *         | 80        | 0.22                  | 24    | 3304                          |         | 3606    |         | 3761    |         | 3889    |         | 3.9                | 2 - 5 - 16   |
|                         |                |             | 120       | 0.49                  | 29    | 4922                          |         | 5470    |         | 5851    |         | 6130    |         |                    | 5 - 12 - 25  |
|                         |                |             | 140       | 0.67                  | 31    | 5308                          |         | 6024    |         | 6496    |         | 6844    |         |                    | 9 - 16 - 30  |
|                         | M31            | 10 *        | 145       | 0.20                  | 24    | 3801                          |         | 4177    |         | 4371    |         | 4537    |         | 2.6                | 4 - 8 - 21   |
|                         |                |             | 215       | 0.45                  | 29    | 5398                          |         | 6091    |         | 6555    |         | 6893    |         |                    | 8 - 16 - 29  |
|                         |                |             | 260       | 0.66                  | 34    | 5986                          |         | 6858    |         | 7429    |         | 7871    |         |                    | 14 - 21 - 33 |
| 10                      | M13            | 5           | 35        | 0.17                  | 16    | 3620                          | 8.90    | 3944    | 2.60    | 4078    | 4.60    | 4173    | 7.10    | 6.1                | 1 - 1 - 5    |
|                         |                |             | 50        | 0.35                  | 21    | 4408                          |         | 4835    |         | 5062    |         | 5223    |         |                    | 1 - 3 - 12   |
|                         |                |             | 70        | 0.69                  | 25    | 5125                          |         | 5737    |         | 6048    |         | 6305    |         |                    | 2 - 5 - 18   |
|                         | M17            | 6           | 55        | 0.22                  | 21    | 4061                          |         | 4432    |         | 4621    |         | 4755    |         | 4.8                | 1 - 2 - 9    |
|                         |                |             | 80        | 0.46                  | 26    | 4676                          |         | 5222    |         | 5507    |         | 5728    |         |                    | 2 - 5 - 17   |
|                         |                |             | 100       | 0.71                  | 29    | 5691                          |         | 6410    |         | 6815    |         | 7143    |         |                    | 4 - 9 - 22   |
|                         | M23            | 8 *         | 100       | 0.23                  | 25    | 3807                          |         | 4257    |         | 4488    |         | 4674    |         | 3.9                | 3 - 6 - 18   |
|                         |                |             | 150       | 0.51                  | 31    | 5642                          |         | 6430    |         | 6974    |         | 7372    |         |                    | 6 - 13 - 28  |
|                         |                |             | 180       | 0.73                  | 33    | 6000                          |         | 7141    |         | 7833    |         | 8346    |         |                    | 10 - 18 - 33 |
|                         | M31            | 10 *        | 180       | 0.22                  | 26    | 4354                          |         | 4891    |         | 5170    |         | 5405    |         | 2.6                | 4 - 9 - 23   |
|                         |                |             | 240       | 0.39                  | 31    | 5849                          |         | 6666    |         | 7230    |         | 7643    |         |                    | 7 - 15 - 30  |
|                         |                |             | 300       | 0.61                  | 40    | 6000                          |         | 7576    |         | 8333    |         | 8894    |         |                    | 11 - 19 - 34 |

NOTES: Reference page C3-10 for operational conditions used for performance notes.

## PERFORMANCE DATA | 2 - PIPE HEATING

| NOMINAL<br>LENGTH<br>ft | NOZZLE<br>SIZE | PRIMARY AIR |           |                       | SOUND | COIL HEATING (Btu/h) |         |         |         |         |         |          |         | INDUCTION<br>RATIO | THROW  |
|-------------------------|----------------|-------------|-----------|-----------------------|-------|----------------------|---------|---------|---------|---------|---------|----------|---------|--------------------|--------|
|                         |                | INLET DIA.  | FLOW RATE | INLET ΔPs             |       | 0.5 GPM              |         | 1.0 GPM |         | 1.5 GPM |         | 2.0 GPM  |         |                    |        |
|                         |                | in          | CFM       | (in H <sub>2</sub> O) | NC    | TOTAL                | ΔP COIL | TOTAL   | ΔP COIL | TOTAL   | ΔP COIL | TOTAL    | ΔP COIL |                    |        |
| 4                       | M13            | 4           | 15        | 0.2                   | 15    | 3308                 | 1.00    | 3900    | 3.80    | 4059    | 8.60    | 4181     | 1.90    | 6.1                | 0-1-4  |
|                         |                |             | 20        | 0.35                  | 17    | 4179                 |         | 5016    |         | 5259    |         | 5452     |         |                    | 1-2-7  |
|                         |                |             | 25        | 0.55                  | 20    | 4804                 |         | 5848    |         | 6159    |         | 6347     |         |                    | 1-3-10 |
|                         | M17            | 4           | 20        | 0.18                  | 16    | 3442                 |         | 4079    | 4264    | 4418    | 4.8     | 6014     |         | 1-1-5              |        |
|                         |                |             | 30        | 0.4                   | 21    | 4561                 |         | 5543    | 5832    | 6014    |         | 1-3-10   |         |                    |        |
|                         |                |             | 40        | 0.71                  | 25    | 5572                 |         | 7069    | 7497    | 7831    |         | 2-5-14   |         |                    |        |
|                         | M23            | 5           | 40        | 0.21                  | 20    | 4000                 |         | 4894    | 5172    | 5316    | 3.9     | 8144     |         | 2-4-12             |        |
|                         |                |             | 60        | 0.48                  | 26    | 5639                 |         | 7237    | 7739    | 8144    |         | 4-8-18   |         |                    |        |
|                         |                |             | 75        | 0.75                  | 29    | 7064                 |         | 8819    | 9533    | 9942    |         | 7-12-21  |         |                    |        |
|                         | M31            | 6           | 70        | 0.18                  | 20    | 4437                 |         | 5526    | 5850    | 6062    | 2.6     | 6062     |         | 2-6-14             |        |
|                         |                |             | 105       | 0.41                  | 25    | 6492                 |         | 8181    | 8799    | 9214    |         | 6-11-20  |         |                    |        |
|                         |                |             | 140       | 0.74                  | 31    | 7859                 |         | 10139   | 11012   | 11459   |         | 10-14-23 |         |                    |        |
|                         | 6              | M13         | 4         | 20                    | 0.15  | 15                   |         | 4561    | 1.40    | 5535    | 5.50    | 5876     |         | 1.60               | 5894   |
| 30                      |                |             |           | 0.34                  | 18    | 5628                 | 7063    | 7500    |         | 7740    |         | 1-2-9    |         |                    |        |
| 40                      |                |             |           | 0.61                  | 22    | 6907                 | 8832    | 9530    |         | 9789    |         | 2-4-13   |         |                    |        |
| M17                     |                | 5           | 30        | 0.17                  | 17    | 4765                 | 5896    | 6238    |         | 6402    | 4.8     | 8791     | 1-2-6   |                    |        |
|                         |                |             | 45        | 0.39                  | 23    | 6310                 | 7998    | 8582    |         | 8791    |         | 2-3-12   |         |                    |        |
|                         |                |             | 60        | 0.69                  | 26    | 8041                 | 10438   | 11321   |         | 11766   |         | 3-6-17   |         |                    |        |
| M23                     |                | 6           | 60        | 0.21                  | 22    | 5539                 | 7095    | 7664    |         | 7876    | 3.9     | 7876     | 2-5-14  |                    |        |
|                         |                |             | 90        | 0.48                  | 27    | 8227                 | 10862   | 11809   |         | 12458   |         | 5-10-21  |         |                    |        |
|                         |                |             | 110       | 0.71                  | 30    | 9016                 | 12139   | 13228   |         | 14068   |         | 8-13-24  |         |                    |        |
| M31                     |                | 8 *         | 105       | 0.19                  | 21    | 6197                 | 7997    | 8667    |         | 8948    | 2.6     | 8948     | 3-7-18  |                    |        |
|                         |                |             | 160       | 0.43                  | 27    | 8953                 | 11958   | 13007   |         | 13780   |         | 7-13-25  |         |                    |        |
|                         |                |             | 210       | 0.74                  | 31    | 10284                | 13635   | 15343   |         | 16314   |         | 12-18-29 |         |                    |        |
| 8                       |                | M13         | 4         | 25                    | 0.14  | 15                   | 5983    | 1.80    |         | 7309    | 7.20    | 7843     | 2.10    | 8045               | 3.70   |
|                         | 40             |             |           | 0.36                  | 20    | 7645                 | 9863    |         | 10617   | 11027   |         | 1-2-10   |         |                    |        |
|                         | 55             |             |           | 0.67                  | 25    | 8656                 | 11561   |         | 12631   | 13171   |         | 2-5-16   |         |                    |        |
|                         | M17            | 5           | 40        | 0.18                  | 19    | 6870                 | 8631    |         | 9278    | 9579    | 4.8     | 9579     | 1-2-7   |                    |        |
|                         |                |             | 60        | 0.4                   | 24    | 7918                 | 10551   |         | 11422   | 11931   |         | 2-4-14   |         |                    |        |
|                         |                |             | 80        | 0.7                   | 28    | 9950                 | 13312   |         | 14651   | 15401   |         | 3-7-19   |         |                    |        |
|                         | M23            | 8 *         | 80        | 0.22                  | 24    | 6667                 | 8902    |         | 9716    | 10133   | 3.9     | 10133    | 2-5-16  |                    |        |
|                         |                |             | 120       | 0.49                  | 29    | 9637                 | 13261   |         | 14739   | 15764   |         | 5-12-25  |         |                    |        |
|                         |                |             | 140       | 0.67                  | 31    | 10453                | 14302   |         | 16233   | 17509   |         | 8-15-28  |         |                    |        |
|                         | M31            | 10 *        | 145       | 0.2                   | 24    | 7657                 | 10241   |         | 11254   | 11777   | 2.6     | 11777    | 4-8-21  |                    |        |
|                         |                |             | 215       | 0.45                  | 29    | 10671                | 14545   |         | 16413   | 17662   |         | 8-16-29  |         |                    |        |
|                         |                |             | 260       | 0.66                  | 34    | 11538                | 16129   |         | 18479   | 20017   |         | 14-20-32 |         |                    |        |
|                         | 10             | M13         | 5         | 35                    | 0.17  | 16                   | 7663    |         | 2.20    | 9755    | 8.90    | 10626    | 2.60    | 10989              | 4.60   |
| 50                      |                |             |           | 0.35                  | 21    | 8958                 | 11878   | 13028   |         | 13640   |         | 1-3-12   |         |                    |        |
| 70                      |                |             |           | 0.69                  | 25    | 9968                 | 13809   | 15459   |         | 16296   |         | 2-5-18   |         |                    |        |
| M17                     |                | 6           | 55        | 0.22                  | 21    | 8302                 | 10943   | 11941   |         | 12452   | 4.8     | 12452    | 1-2-9   |                    |        |
|                         |                |             | 80        | 0.46                  | 26    | 9306                 | 12599   | 14070   |         | 14839   |         | 2-5-17   |         |                    |        |
|                         |                |             | 100       | 0.71                  | 29    | 10756                | 15334   | 17272   |         | 18363   |         | 4-9-22   |         |                    |        |
| M23                     |                | 8 *         | 100       | 0.23                  | 25    | 7479                 | 10257   | 11470   |         | 12094   | 3.9     | 12094    | 3-6-18  |                    |        |
|                         |                |             | 150       | 0.51                  | 31    | 10389                | 15202   | 17326   |         | 18791   |         | 6-13-28  |         |                    |        |
|                         |                |             | 180       | 0.73                  | 33    | 11235                | 16406   | 19240   |         | 21107   |         | 9-17-32  |         |                    |        |
| M31                     |                | 10 *        | 180       | 0.22                  | 26    | 8295                 | 11733   | 13178   |         | 13930   | 2.6     | 13930    | 4-9-23  |                    |        |
|                         |                |             | 240       | 0.39                  | 31    | 10770                | 15760   | 17962   |         | 19481   |         | 7-15-30  |         |                    |        |
|                         |                |             | 300       | 0.61                  | 40    | 11854                | 17329   | 20414   |         | 22453   |         | 11-19-34 |         |                    |        |

NOTES: Reference page C3-10 for operational conditions used for performance notes.

**PERFORMANCE DATA****NOTES:**

1. All performance data based on test performed in accordance with ASHRAE Standard 200-2018.
2.  $\Delta P_s$  values are measured in inches of water.
3. NC values are based on room absorption of 10 dB. A dash (-) indicates an NC value less than 15.
4. Throw values are based on isothermal supply air and represent throw distances to terminal velocities of 150, 100 and 50 fpm respectively.
5.  $\Delta P_{\text{Coil}}$  values are measured in inches of water.  $\Delta P_{\text{Coil}}$  values in shaded cells indicate use of a two circuit coil. All other values represent a single circuit coil.
6. Induction ratio is multiplied by the volume flow rate of primary air to estimate the volume flow rate of room air entrained through the coil.
7. \* denotes oval inlet air connection.

**COOLING PERFORMANCE:**

- Cooling capacity listed (TOTAL) is the total sensible heat removal by the beam's integral coil. It does not include any contribution or offset by the primary air.
- Capacity is based on 18°F  $\Delta T$  between the induced air and the chilled water supply. Table 1 provides correction factors for other temperature differentials.

- Primary air sensible cooling contribution can be calculated by the following equation:

$$q_{\text{SENSPA}} = 1.085 \times \text{CFM}_{\text{PA}} \times (T_{\text{ROOM}} - T_{\text{PA}})$$

- Primary air latent cooling can be calculated by the following equation:

$$q_{\text{LATENT}} = 0.69 \times \text{CFM}_{\text{PA}} \times (W_{\text{ROOM}} - W_{\text{PA}})$$

where  $W_{\text{ROOM}}$  and  $W_{\text{PA}}$  are the humidity ratio of the room and primary air respectively expressed in Grains of moisture per pound dry air.

**TABLE 4: CORRECTION FOR ( $\Delta T$ ) BETWEEN ENTERING AIR AND ENTERING CHILLED WATER**

| ACTUAL $\Delta T$        | 10   | 12   | 14   | 16   | 18   | 20   | 22   | 24   |
|--------------------------|------|------|------|------|------|------|------|------|
| MULTIPLY TABLE VALUE BY: | 0.56 | 0.67 | 0.78 | 0.89 | 1.00 | 1.11 | 1.22 | 1.33 |

**HEATING PERFORMANCE:**

- Heating capacity listed (TOTAL) is the sensible heat added by the beam's integral coil. It does not include any contribution or offset by the primary air.
- Capacity is based on 50°F  $\Delta T$  between the induced air and the heating water supply. Table 2 provides correction factors for other temperature differentials.
- Primary air sensible heating offset (or contribution) can be calculated by the following equation:

$$q_{\text{SENSPA}} = 1.085 \times \text{CFM}_{\text{PA}} \times (T_{\text{PA}} - T_{\text{ROOM}})$$

- If the primary air temperature is lower than that of the room, it will offset the coil's heating.
- If the primary air temperature is higher than that of the room, it will contribute to the coil's heating.

**TABLE 2: CORRECTION FOR ( $\Delta T$ ) BETWEEN ENTERING AIR AND ENTERING HEATING WATER**

| ACTUAL $\Delta T$        | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|
| MULTIPLY TABLE VALUE BY: | 0.40 | 0.60 | 0.80 | 1.00 | 1.20 | 1.40 | 1.60 | 1.80 | 2.00 | 2.20 | 2.40 |

**LEGEND:**

$\Delta P_s$  = Unit Inlet Pressure [in wg]

$q_{\text{Coil}}$  = Sensible Capacity, Coil [Btu/h]

$\Delta \text{Coil}$  = Water coil pressure drop [ft wg]

$q_{\text{SENSPA}}$  = Sensible Capacity, Primary Air [Btu/h]

$W_{\text{ROOM}}$  = Humidity Ratio of the Room

$\text{CFM}_{\text{PA}}$  = Air Flowrate, Primary Air [CFM]

$T_{\text{PA}}$  = Temperature Primary Air [°F]

$T_{\text{ROOM}}$  = Temperature Room Air [°F]

$q_{\text{LATENT}}$  = Latent Capacity, Primary Air [Btu/h]

$W_{\text{PA}}$  = Humidity Ratio of the Primary Air