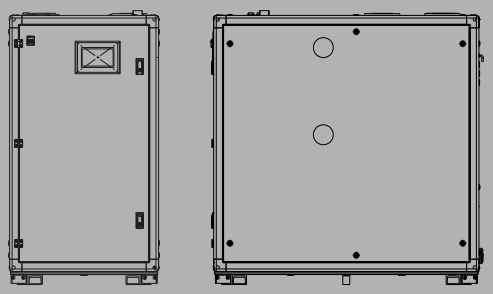
High efficiency commercial heating

10/2020
27017902 rev.00

Array

Stainless Steel Condensing Floor Standing Boilers

Altitude Derating



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ALTITUDE DERATING TABLES

When the appliance is installed at an altitude higher than 2000 ft, the fan speed must be set to the top of the available range in any case and a de-rating of the input capacity must be considered in function of the altitude combined with the total length of the vent and combustion air pipe as reported in the following tables (input BTU/hr)

NOTE: The following chart compensates for the affects of altitude on the energy content of the gas supply. No additional de-rate required.

ARRAY AR 800

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	800,000	800,000	800,000	800,000
3,000	768,000	754,44	741,11	728,03
4,000	737,280	724,26	711,47	698,90
5,000	707,789	695,29	683,01	670,95
6,000	679,477	667,48	655,69	644,11
7,000	652,298	640,78	629,46	618,35
8,000	626,206	615,15	604,28	593,61
9,000	601,158	590,54	580,11	569,87
10,000	577,112	566,92	556,91	547,07

ARRAY AR 1000

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	1,000,000	1,000,000	1,000,000	1,000,000
3,000	917,896	901,967	886,035	870,105
4,000	887,540	872,047	856,645	841,243
5,000	857,004	842,131	827,256	812,383
6,000	826,557	812,212	797,866	783,520
7,000	796,112	782,296	768,478	754,661
8,000	765,665	752,376	739,087	725,800
9,000	735,220	722,461	709,701	696,939
10,000	704,773	692,541	680,310	668,078

ARRAY AR 1500

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	1,500,000	1,500,000	1,500,000	1,500,000
3,000	1,376,845	1,352,950	1,329,053	1,305,158
4,000	1,331,174	1,308,071	1,284,967	1,261,864
5,000	1,285,507	1,263,197	1,240,885	1,218,575
6,000	1,239,836	1,218,318	1,196,799	1,175,281
7,000	1,194,169	1,173,444	1,152,716	1,131,992
8,000	1,148,498	1,128,565	1,108,631	1,088,700
9,000	1,102,831	1,083,691	1,064,551	1,045,409
10,000	1,057,160	1,038,812	1,020,466	1,002,117

ARRAY AR 2000

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	2,000,000	2,000,000	2,000,000	2,000,000
3,000	1,835,793	1,803,934	1,772,070	1,740,211
4,000	1,774,899	1,744,094	1,713,290	1,682,485
5,000	1,714,009	1,684,263	1,654,513	1,624,767
6,000	1,653,115	1,624,424	1,595,732	1,567,041
7,000	1,592,225	1,564,592	1,536,955	1,509,323
8,000	1,531,331	1,504,753	1,478,175	1,451,600
9,000	1,470,441	1,444,921	1,419,402	1,393,878
10,000	1,409,547	1,385,082	1,360,621	1,336,256

ARRAY AR 3000

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	3,000,000	3,000,000	3,000,000	3,000,000
3,000	2,753,689	2,705,900	2,658,105	2,610,316
4,000	2,662,349	2,616,142	2,569,935	2,523,728
5,000	2,571,013	2,526,394	2,481,769	2,437,150
6,000	2,479,672	2,436,636	2,393,598	2,350,561
7,000	2,388,337	2,346,888	2,305,433	2,263,984
8,000	2,296,996	2,257,129	2,217,262	2,177,401
9,000	2,205,661	2,167,382	2,129,102	2,090,817
10,000	2,114,320	2,077,623	2,040,931	2,004,234

ARRAY AR 4000

Altitude (ft)	From 0% to 25%	From 25% to 50%	From 50% to 75%	From 75% to 100%
0-2,000	4,000,000	4,000,000	4,000,000	4,000,000
3,000	3,671,586	3,607,867	3,544,141	3,480,422
4,000	3,549,798	3,488,189	3,426,579	3,364,970
5,000	3,428,018	3,368,526	3,309,026	3,249,533
6,000	3,306,230	3,248,847	3,191,464	3,134,082
7,000	3,184,450	3,129,184	3,073,911	3,018,645
8,000	3,062,662	3,009,506	2,956,349	2,903,201
9,000	2,940,881	2,889,842	2,838,803	2,787,757
10,000	2,819,094	2,770,164	2,721,242	2,672,312

To calculate the de-rating of the input capacity follow this example:

We have an **Array AR 4000** boiler installed at 5,400 ft with a 10" flue system. The equivalent length of the vent pipe installed is 55 ft.The equivalent length of the air combustion pipe installed is 35 ft.

The total equivalent length of the flue system is 55+35 = 90 ft. The maximum equivalent length for this type of installation is (see "Appendix H - Venting Size Data") 100 ft.

The % range is 90/100 = 90%. This value is within the 75% and 100%.

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Now the correct de-rating value is given from the value of the fourth column (From 75% to 100%) that crosses the row with 6,000 ft =3,134,082 BTU/hr.

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