

Ratings for Steam or Hot Water Type

The rating of steam type unit heaters has been standardized by a code* in which steam at 2 psi and air entering at 60 F are used as the standard basis of rating. The capacity of a heater increases as the steam pressure increases, and decreases as the entering air temperature increases. The heating capacity for any condition of steam pressure and entering air temperature other than standard may be calculated approximately from any given rating by the use of factors in Tables 2 and 3. Table 2 is used for the blow-through type and Table 3 for the draw-through type of unit.

Ratings for Electric Type

Electric type unit heaters are usually limited in size to a maximum of about 9 kw capacity. They consist of resistance type heating elements either of the radiant or convector type. The convector type may have a fan for forced circulation or may be of the gravity type. Electric heaters are made in the built-in wall model, and the free standing or portable types.

Electric unit heaters are rated on the energy input to the heater, expressed in terms of kilowatts, Btu or EDR. Quite often all three ratings are given in parallel columns in the catalogs.

Ratings for Gas Fired Type

The gas fired type of unit heater can be secured either with the disc or propeller type fans or with the centrifugal type. They may be secured in a wide range of sizes from 45,000 to more than 1,650,000 Btu output capacity and in floor or suspended models.

Gas fired unit heaters are usually rated in terms of both input and output according to the approval requirements of the *American Standards Association*.

Ratings for Oil Fired Type

The oil fired type of unit heater is usually equipped with the centrifugal type of fan only and can be secured in sizes ranging from 125,000 to 1,650,000 Btu per hour output capacity in standard units. It is furnished in either the floor mounted or in smaller sizes in the suspended type. Greater capacities are available in coal fired units converted to oil burning.

Ratings for Coal Fired Type

The stoker fired type of unit heater can be secured in ranges of from 300,000 to 6,000,000 (or more) Btu per hour output capacity. Ratings are based upon the delivered output at the heater outlet.

Effect of Resistance Upon Capacity

Unit heaters are customarily rated as free delivery type units. If outside air intakes, air filters, or ducts on the discharge side are used with the unit a reduction in air and heating capacity will result because of this added resistance. The percentage of this reduction in capacity will depend upon the characteristics of the heater and on the type, design and speed of the fans so that no specific percentage reduction can be assigned for all heaters at a given added resistance. In general, however, disc or propeller fan type units will experience a larger reduction in capacity than

*Standard Code for Testing and Rating Steam Unit Heaters (A.S.H.V.E. TRANSACTIONS, Vol. 36, 1930, p. 165), prepared by a Joint Code Committee of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS and the Industrial Unit Heater Association and adopted 1930.

TABLE 2. CONSTANTS FOR DETERMINING THE CAPACITY OF BLOW-THROUGH TYPE UNIT HEATERS FOR VARIOUS STEAM PRESSURES AND TEMPERATURES OF ENTERING AIR
(Based on Steam Pressure of 2 lb Gage and Entering Air Temperature of 60 F)

STEAM PRESSURE LB PER SQ IN.	TEMPERATURE OF ENTERING AIR											
	-10°	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°
0	1.538	1.446	1.369	1.273	1.191	1.110	1.034	0.956	0.881	0.809	0.739	0.671
2	1.585	1.495	1.405	1.320	1.237	1.155	1.078	1.000	0.926	0.853	0.782	0.713
5	1.640	1.550	1.456	1.370	1.289	1.206	1.127	1.050	0.974	0.901	0.829	0.760
10	1.730	1.639	1.545	1.460	1.375	1.290	1.211	1.131	1.056	0.982	0.908	0.838
15	1.799	1.708	1.614	1.525	1.441	1.355	1.275	1.194	1.117	1.043	0.970	0.897
20	1.861	1.769	1.675	1.584	1.498	1.416	1.333	1.251	1.174	1.097	1.024	0.952
30	1.966	1.871	1.775	1.684	1.597	1.509	1.429	1.346	1.266	1.190	1.115	1.042
40	2.058	1.959	1.862	1.771	1.683	1.596	1.511	1.430	1.349	1.270	1.194	1.119
50	2.134	2.035	1.936	1.845	1.755	1.666	1.582	1.498	1.416	1.338	1.262	1.187
60	2.196	2.094	1.997	1.902	1.811	1.725	1.640	1.555	1.472	1.393	1.314	1.239
70	2.256	2.157	2.057	1.961	1.872	1.782	1.696	1.610	1.527	1.447	1.368	1.293
75	2.283	2.183	2.085	1.990	1.896	1.808	1.721	1.635	1.552	1.472	1.392	1.316
80	2.312	2.211	2.112	2.015	1.925	1.836	1.748	1.660	1.577	1.497	1.418	1.342
90	2.361	2.258	2.159	2.063	1.968	1.880	1.792	1.705	1.621	1.541	1.461	1.383
100	2.409	2.307	2.204	2.108	2.015	1.927	1.836	1.749	1.663	1.581	1.502	1.424

Note: To determine capacity at any steam pressure and entering temperature, multiply constant from table by rated capacity at 60 F entering and 2 lb pressure.