TABLE 64. SIZE OF PLAIN AND HYDRO-PNEUMATIC TANKS

Compensation Lb. per Hr.	Sizes of Plain and Hydro-Pneumatic Tanks			
	For Air Separator only		For Air Separator and Water Storage	
	Diameter In.	Length In.	Diameter In.	Length In.
4000	12	24	24	36
6000	12	36	24	48
8000	18	30	24	72
10,000	18	48	30	48
16,000	24	48	30	60
24,000	30	48	36	60
	24	72	36	72
34,000	36	60	36	96
	36	72	42	72
45,000	42	60	42	96
	36	96	....	....
60,000	42	72	48	72
	42	96	48	96

Receivers.—The receiving tank capacity should be stated in gallons, and in case of automatically controlled units should be the capacity of the tank in gallons between the high and low water levels in this tank, as determined by the water line control. The receiving tank may be placed either on the suction side or on the discharge side of the pump. When placed on the suction side of the pump the capacity of the tank may be used to retain the condensation and to take care of the fluctuations between the rate of condensate returned and the rate of the pump delivery. The suggested receiving tank capacities (as previously defined) for continuously operated and for automatically controlled units are as follows:

TABLE 65. RECEIVER TANK CAPACITIES

Sq. Ft. Equivalent Direct Cast Iron Radiation Surface	Total Receiver Tank Capacity in Gallons	Receiver Tank Capacity between High and Low Water Limits where Automatic Water Line Control is Used.
8,000	28	20
16,000	33	24
26,000	40	29
40,000	49	35
65,000	63	47
100,000	80	63

Air Capacities.—The air capacities recommended, *refer* to cubic feet of air per 1000 sq. ft. of equivalent cast iron direct radiation, may be assumed on a decreasing ratio as the system increases in capacity of equivalent square feet of radiation, in accordance with the Table 66. It should be noted that while water capacities of pumps to be added for fan blast heaters are to be based upon their equivalent in direct radiation

the air capacities for this class of radiation may be the same as for direct radiation.

TABLE 66. AIR CAPACITIES

Sq. Ft. Direct Equivalent Radiation Surface	Diameter Orifice Vac. 10"	Air Capacity Cu. Ft. per Min.
8,000	$\frac{9}{64}$"	5
16,000	$\frac{3}{16}$"	9
26,000	$\frac{1}{4}$"	15
40,000	$\frac{9}{32}$"	19
65,000	$\frac{5}{16}$"	34
100,000	$\frac{1}{2}$"	60
150,000	$\frac{9}{16}$"	80
250,000	Three $\frac{1}{2}$"	180

The air capacity of the pump should be measured at a point in the main vacuum return line just ahead of the vacuum strainer when the pump is operating under the vacuum specified at the pump suction and when handling the quantity of condensate specified at a temperature not exceeding 180 deg. fahr. Air test may be made with water at lower temperatures. This determination should be made by means of a standard test orifice located in an inlet connection to the pump suction and consisting of a plate $\frac{1}{8}$ in. thick with a reamed hole having sharp edges and of a diameter corresponding to the capacity of the pump.

Fig. 21 may be used to give the quantity of air handled, corresponding to several sizes of orifices and different degrees of vacuum met with in practice.

TABLE 67. ONE PUMP ONE MOTOR RETURN LINE SYSTEM

Size	Sq. Ft. Direct Equivalent Radiation Surface	Diameter Orifice Vacuum 10 In.	Air Capacity Cu. Ft. per Min.	Water Capacity Gals. per Min. 10 Lb. Pressure 180° F.	Actual H. P.	R. P. M.	H. P. of Motor
A	8000	9–64	6	11	0.9	1800	1
B	16,000	3–16	11	22	1.4	1800	1½
C	26,000	1–4	19	35	2.0	1800	2
D	40,000	9–32	25	60	2.8	1200	3
E	65,000	3–8	42	90	3.9	1200	5
F	100,000	1–2	75	140	9.0	1200	10
G	150,000	9–16	90	200	10.0	900	10
H	250,000	Three 1–2	180	400	10.0	720	20

Water Capacity.—The water capacity of the pump when operating against 8 in. of mercury vacuum should be not less than two-thirds of a pound of water per hour per square foot of equivalent cast iron direct radiation based upon condensation at a temperature of not over 180 deg. fahr. when the pump is delivering water against a specified gage pressure at the water discharge of the pump. For pumps handling both air and water the above water capacity must be delivered, when the