

No additional allowance need be made for covered mains or risers, but exposed mains or risers used as heating surfaces should be included in calculating the equivalent square feet of direct radiation.

PUMP SPECIFICATIONS

Reciprocating and power driven pumps should be specified as to make, size, water and steam working pressures, piston speed; temperature of water to be handled, electric motor characteristics and the trade standard, required in accordance with the manufacturers adoptions copy of which is appended to this section of the code for reference.

TABLE 77. MOTOR DRIVEN CONDENSATION PUMP CAPACITIES FOR DELIVERING AGAINST VARIOUS PRESSURES

RADIATION IN SQ. FT. OF DIRECT RADIATION	MINIMUM GALLONS PER MIN.	MAXIMUM BOILER PRESSURE LB.	MOTOR H. P.	SUGGESTED SIZE OF PIPING INCHES	RADIATION IN SQ. FT. OF DIRECT RADIATION	MINIMUM GALLONS PER MIN.	MAXIMUM BOILER PRESSURE LB.	MOTOR H. P.	SUGGESTED SIZE OF PIPING INCHES
4000	6-8	10	1/4	1	15,000	25-30	10	3/4	2
4000	6-8	15-40	1/2	1	15,000	25-30	15	1	2
4000	6-8	50-60	3/4	1	15,000	25-30	20-30	1 1/2	2
					15,000	25-30	40	2	2
					15,000	25-30	50-60	3	2
6000	9-12	10	1/4	1 1/4	20,000	30-40	10	3/4	2
6000	9-12	15-40	3/4	1 1/4	20,000	30-40	15	1	2
6000	9-12	50-60	1	1 1/4	20,000	30-40	20	2	2
					20,000	30-40	30-40	3	2
					20,000	30-40	50-60	5	2
8000	12-16	10	1/2	1 1/4	25,000	40-50	10	1	2 1/2
8000	12-16	15	3/4	1 1/4	25,000	40-50	15	1 1/2	2 1/2
8000	12-16	20	1	1 1/4	25,000	40-50	20	2	2 1/2
8000	12-16	30-60	1 1/2	1 1/4	25,000	40-50	30-40	3	2 1/2
					25,000	40-50	50-60	5	2 1/2
10,000	15-20	10	1/2	1 1/2	30,000	50-60	10	1	2 1/2
10,000	15-20	15	3/4	1 1/2	30,000	50-60	15	1 1/2	2 1/2
10,000	15-20	20-30	1	1 1/2	30,000	50-60	20	2	2 1/2
10,000	15-20	30-40	1 1/2	1 1/2	30,000	50-60	30-60	5	2 1/2
10,000	15-20	50-60	2	1 1/2					

The kind of drive should be specified for power driven pumps.

Centrifugal and Rotary pumps should be specified as to make, type, capacity temperature of water to be handled, speed and motor characteristics including:

1. Name of motor manufacturer
2. Manufacturers rated Horse Power
3. The maximum temperature rise for any part of the motor above the temperature of the surrounding air
4. Full Speed in R. P. M.
5. Current characteristics
6. Whether the motor is open, semi-enclosed or fully enclosed

The following should also be included in the specifications, total head to be pumped against including suction lift friction head, velocity head

TABLE 78. 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	1 1/2
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

TABLE 79. TWO PUMP ONE MOTOR RETURN LINE SYSTEM VACUUM PUMPS

CAPACITY SQ. FT. OF DIRECT RADIATION	CAPACITY G. P. M.	PRESSURE AT PUMP	MOTOR H. P.
6000	9	10	3/4
6000	9	15	1
8000	12	10	1
8000	12	15	1 1/2
12,000	18	10	1
12,000	18	15	1 1/2
18,000	27	10	1 1/2
18,000	27	15	2
30,000	45	10	2
30,000	45	15	3

TABLE 80. TWO PUMP TWO MOTOR RETURN LINE SYSTEM VACUUM PUMP

CAPACITY SQ. FT. OF DIRECT RADIATION	CAPACITY G. P. M.	PRESSURE AT PUMP	MOTOR H. P.	
			Air	Water
6000	9	10	1 1/2	3/4
6000	9	15	1 1/2	3/4
8000	12	10	1 1/2	3/4
8000	12	15	1 1/2	1
12,000	18	10	3/4	3/4
12,000	18	15	3/4	1
18,000	27	10	3/4	1
18,000	27	15	3/4	2
25,000	38	10	1	1 1/2
25,000	38	15	1	2
30,000	45	10	1	1 1/2
30,000	45	15	1	2

and head against which the pump must discharge. The vacuum under which return pumps are required to operate and as to whether two or more units are to operate in parallel or separately.