TABLE 4. SIZES, REVOLUTIONS PER MINUTE, HEADS, POWER REQUIRED AND BOILER HORSEPOWER FOR SEVERAL COMMERCIAL SIZES OF CENTRIFUGAL TYPE BOILER FEED PUMPS

SIZE OF PUMP INCHES	BRAKE HORSEPOWER	PIPE SIZES, INCHES		CAPACITY GALLONS PER MINUTE	BOILER HORSEPOWER SERVED WITHOUT SAFETY FACTOR
		Suction	Discharge		
Two Stage for 100 lb. Working Pressure					
2	13.3	2½	2	100	1,450
2½	16.9	3	2½	150	2,175
3	23.6	4	3	225	3,262
4	37.2	6	4	400	5,800
5	57.0	7	5	620	8,990
6	76.5	8	6	900	13,000
Three Stage for 150 lb. Working Pressure					
2	19.9	2½	2	100	1,450
3	35.4	4	3	225	3,262
4	55.8	6	4	400	5,800
5	85.5	7	5	620	8,990
6	114.7	8	6	900	13,000
Four Stage for 200 lb. Working Pressure					
2	33.2	2½	2	100	1,450
3	59.0	4	3	225	3,262
4	93.0	6	4	400	5,800
5	143.0	7	5	620	8,990
6	192.0	8	6	900	13,000

TABLE 5. SCREW PUMPS

SIZE OF PUMP INCHES	GALLONS PER MINUTE	MAXIMUM REVOLUTIONS	SUCTION INCHES	DISCHARGE INCHES
2	2– 15	1,600	2	1½
2½	10– 20	1,600	2	1½
3	20– 50	1,600	2½	2½
3¼	40– 60	1,600	3	2½
3½	55– 100	1,500	4	3
4	85– 200	1,400	4	4
5	175– 275	1,200	5	4
5¼	200– 325	1,200	5	4
6	275– 475	1,200	6	6
7	300– 600	1,000	8	6
8	450– 750	875	8	8
9	700–1000	720	10	10
10	800–1400	700	12	12
12	1200–2100	600	14	14
16	1750–4200	425	16	15

Continuously Operating Return Pumps

The piston speed in feet per minute should not be more than 10 times the square root of the number of inches in the length of stroke.

The normal capacity of standard centrifugal pumps should be based on condensate at a temperature of not over 180 deg. fahr. For temperatures of condensate above this the capacity should be increased as in Table 6.

The increase in pump capacity may be reduced if a static head above the pump suction is provided. When this static head is made equivalent to the absolute boiling pressure of the condensate (measured in feet of water) minus 12 ft., no increase in pump capacity is required.

This static suction head requirement may also be reduced about 50 per cent when special large suction inlets or special impellers are provided.

Sufficient head in addition to the total head necessary to overcome static head, velocity head, pipe friction and boiler pressure should be provided wherever condensate is to be returned directly to a boiler from the pump.

TABLE 6. CORRECTION FACTORS FOR STANDARD CENTRIFUGAL PUMPS FOR TEMPERATURES OF CONDENSATE ABOVE 180 DEG. FAHR. AT PUMP SUCTION

DEG. FAHR.	FACTOR
190	1.15
200	1.56
204	2.00

Note.—To use this Table, multiply the quantity of condensate to be handled by the factor corresponding to the temperature of the condensate at the pump suction and select a pump for the quantity thus found.

TABLE 7. SIMPLEX PISTON TYPE STEAM DRIVEN CONDENSATION PUMP AND RECEIVERS

CYLINDER SIZES INCHES			PIPE SIZES INCHES				DRAINING CAPACITY	
Steam	Water	Stroke	Steam	Exhaust	Inlet	Delivery	Square Feet	1 In. Pipe
2½	1⅜	2	¼	⅜	2	½	1,000	3,000
3	1¾	2½	⅜	½	2	¾	2,000	6,000
4	2⅜	3	⅜	¾	2	¾	3,000	9,000
5	3	3½	½	¾	2	1	4,500	13,500
5	3	6	½	¾	2	1¼	7,500	22,500
5½	3½	6	¾	1	2	1½	9,000	27,000
6	3⅝	8	¾	1	2½	2	13,000	39,000
6	4	8	¾	1	2½	2	15,000	45,000
7	4	8	1	1¼	2½	2	15,000	45,000
8	5	10	1	1½	3½	2½	27,000	81,000
10	6	12	1¼	1½	4	3	40,000	120,000
12	7¼	12	1½	2	5	4	65,000	195,000
12	8	12	1½	2	5	4	70,000	210,000

VACUUM HEATING PUMPS

Return-line vacuum heating pumps may be of the following types: