

Piston speeds in feet per minute for reciprocating boiler feed pump ought not to exceed 10 times the square root of the number of inches in the length of stroke of the water pistons.

Direct acting reciprocating steam driven or power driven boiler feed pumps are generally found to be more efficient for smaller installations

TABLE 53. SIZES, REVOLUTIONS PER MINUTE, HEADS PUMPED AGAINST, POWER REQUIRED AND BOILER HORSE-POWER FOR SEVERAL COMMERCIAL SIZES OF CENTRIFUGAL BOILER FEED PUMPS

SIZE OF PUMP INCHES	H. P.	PIPE SIZES INCHES		CAPACITY GALLONS PER MIN.	BOILER H. P. SERVED WITHOUT FACTOR OF SAFETY
		Suction	Discharge		
Two Stage for 100 lb. Working Pressure					
2		2½	2	100	1450
2½		3	2½	150	2175
3		4	3	225	3262
4		5	4	400	5800
5		6	5	620	8990
6		8	6	900	13,000
8		10	8	1600	23,000
Three Stage for 150 lb. Working Pressure					
2		2½	2	100	1450
2½		3	2½	150	2175
3		4	3	225	3262
4		5	4	400	5800
5		6	5	620	8990
6		8	6	900	13,000
8		10	8	1600	23,000
Four Stage for 250 lb. Working Pressure					
2		2½	2	100	1450
2½		3	2½	150	2175
3		4	3	225	3262
4		5	4	400	5800
5		6	5	620	8990
6		8	6	900	13,000
8		10	8	1600	23,000

TABLE 54. DIRECT ACTING STEAM DRIVEN DUPLEX RECIPROCATING BOILER FEED PUMPS

DIA. OF STEAM CYL. IN INCHES	DIA. OF WATER CYL. IN INCHES	LENGTH OF STROKE IN INCHES	NO. OF STROKES PER MIN.	DISCHARGE IN GALLONS		EQUIVALENT DIA. OF SINGLE CYL. PUMP	BOILER H. P. SERVED WITHOUT FACTOR OF SAFETY	PIPE STEAM INCHES	SIZE EXHAUST INCHES	SUCTION INCHES	DISCHARGE INCHES
				Per Stroke	Per Min.						
3	2	3	70	0.04	5.6	2½	80	½	¾	1¼	1
4½	2½	4	60	0.10	12.0	4	180	½	¾	1½	1¼
5¼	3½	5	50	0.20	20.0	5	300	¾	1¼	2	1½
6	4	6	50	0.33	33.0	5½	480	1	1½	2½	2
7½	4½	6	50	0.42	42.0	6¾	600	1½	2	3	2½
7½	5	10	40	0.85	68.0	7	1000	1½	2	3	2½
10	6	10	40	1.22	97.6	8½	1400	2	2½	4	3
12	7	12	35	2.00	140.0	9¾	2000	2½	3	5	4

TABLE 55. HORIZONTAL DUPLEX PISTON PACKED POWER DRIVEN BOILER FEED PUMPS FOR 100 LB. WORKING PRESSURE

SIZE OF PUMP CYLINDERS IN INCHES		NO. OF REVOLUTIONS PER MIN.	DISPLACEMENT GALLONS		BOILER H. P. SERVED WITHOUT FACTOR OF SAFETY	H. P. REQUIRED TO DRIVE PUMP	PIPE SIZES INCHES	
Dia.	Stroke		Per Rev.	Per Min.			Suction	Discharge
2½	4	30	0.34	10.2	148	1.5	1½	1¼
3	4	30	0.49	14.7	213	4.0	2	1½
3½	5	30	0.83	24.9	361	3.5	2½	2
4	6	25	1.30	32.5	471	4.0	3	2½
8	10	20	8.69	173.8	2520	18.0	5	4

TABLE 56. RECIPROCATING SINGLE ACTING POWER DRIVEN TRIPLEX BOILER FEED PUMPS FOR 150 LB. WORKING PRESSURE

SIZE OF PUMP CYLINDERS IN INCHES		NO. OF REVOLUTIONS PER MIN.	DISPLACEMENT GALLONS		BOILER H. P. SERVED WITHOUT FACTOR OF SAFETY	H. P. REQUIRED TO DRIVE PUMP	PIPE SIZES INCHES	
Dia.	Stroke		Per Rev.	Per Min.			Suction	Discharge
1½	2	50	0.045	2.25	33	0.40	¾	¾
1¾	2½	50	0.078	3.90	57	0.65	1	1
2	3	40	0.122	4.88	70	0.80	1¼	1
2½	4	30	0.255	7.65	110	1.15	1½	1¼
3	4	30	0.367	11.01	160	1.40	1½	1¼
4	4	30	0.652	19.56	280	4.60	2	1½
4	6	25	0.978	24.45	355	3.10	2½	2
5	8	20	2.041	40.82	592	5.00	3	2½
6	8	20	2.938	58.76	852	6.00	3½	3
8	10	20	6.520	130.40	1891	14.00	4	3

TABLE 57. SCREW PUMPS

Since the capacity and pressure at which Screw Pumps will operate is almost infinite, we can only give some idea of their capacity. Efficiencies range from 60% to 70%.

SIZE	G. P. M.	MAX. REV.	SUCTION INCHES	DISCHARGE INCHES
2	2-15	1600	2	1½
2½	10-20	1600	2	1½
3	20-50	1600	2½	2½
3½	40-60	1600	3	2½
3½	55-100	1500	4	3
4	85-200	1400	4	4
5	175-275	1200	5	4
5½	200-325	1200	5	4
6	275-475	1200	6	6
7	300-600	1000	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