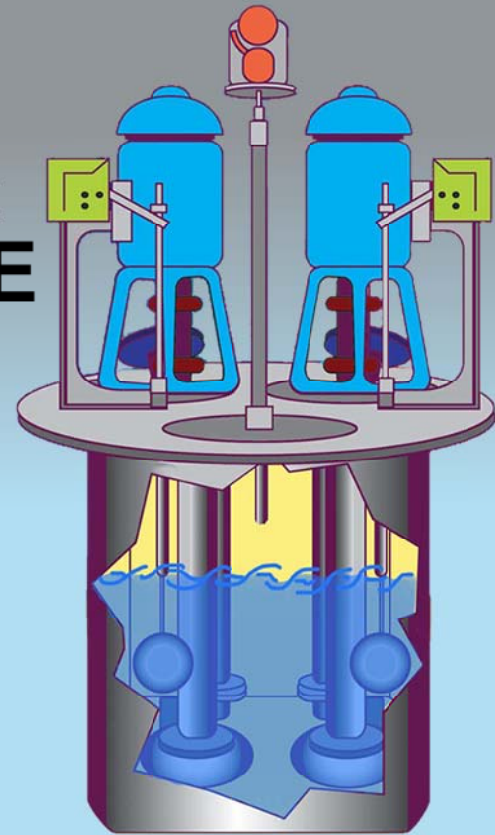


FLO FAB



VERTICAL COLUMN PUMPS

Series "SUP" - Effluent
"SEP" - SEWAGE



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Manufacturer of Pumps, Tanks, Heat Exchangers & Accessories
for HVAC Market After-Sales Parts and Services

FLO FAB INC
LAKE WORTH,
FLORIDA, USA



VERTICAL COLUMN PUMPS

SERIES SUP - SEP

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DESCRIPTION

"Sump Pump" is the term applied to units suitable for handling clear liquids or small solids such as may pass through the strainer with which each pump is equipped. Efficiencies in some ratings are higher than with pumps specifically designed for solids handling. Heavy duty construction, is used in our sump column pumps series SUP and in our sewage column pumps Series SEP.

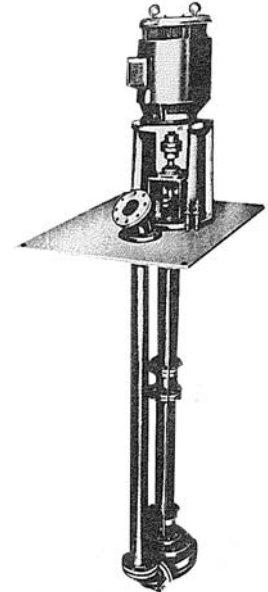
SELECTING THE RIGHT PUMP

STEP 1 Decide the required capacity in USGPM.

This information may be specified in the typical specification or data sheet or it may be necessary to calculate it.

Plumbing fixtures were individually tested and the amount of liquid waste discharged through the outlet of each in a given interval was carefully measured. The flow from a wash basin was found to be approximately 7½ USGPM and this was established as a basic volume and termed "one fixture unit".

Drainage capacities of sinks, bathtubs and other fixtures tested, exceeded those of a basin so number of "fixture units" for these became greater. Plumbing code table giving relative values, is presented below:



FIXTURES	FIXTURE UNITS		PUMP CAPACITIES	
	Private	Public	Total Fix. Units	Min. Pump Capacity (USGPM)
Toilet	3 (Flush Tank)	10 (Flush Valve)		
Lavatory or Wash Basin	1	2	20	45
Bathtub	2	4	40	60
Kitchen Sink	2	4	60	70
Drinking Fountain	1	2	80	80
Laundry Tub	3	N/A	100	90
Urinal	3 (Flush Tank)	10 (Flush Valve)	120	95
Shower Head	2	4	140	100
Floor Drain	3	3	160	105
Slop Sink	N/A	4	180	110
			200	115
			250	125
			350	150

Note: For average service, pump capacities relative to fixture units.



Example: A residential building (flush tanks) requires a sewage pump located below the sewer level, to handle the following fixtures:

FIXTURES	UNITS
4 toilets at 3 units each	12
4 Basins at 1 units each	4
4 Showers at 2 units each	8
4 Bathtubs at 2 units each	8
2 Floor drains at 3 units each	6
1 Kitchen sink at 2 units	2
	<hr/>
	40 units in total

The minimum pump capacity required for 40 fixture units is 60 USGPM

MARGIN OF SAFETY

If in doubt it may be wise to decide on pump and sump, somewhat larger than listed as "minimum requirements". The best choice whenever feasible, is probably a duplex unit. This not only provides liberal extra margin in case of emergency, but also permits one pump to be serviced without shutting down the system.

ADDITIONAL FLOW

It is important that estimate be made of any present or potential drainage not included in the fixture unit count. This may comprise discharge from air conditioning system or boiler, rainfall from the roof or concrete parking area, seepage from tile beds, etc. The total volume plus a reasonable margin of safety should be added directly to the pump capacity.

Note: Probable rainfall on roof or concrete court may be estimated at 3 USGPM per 100 sq. ft (Maximum 4.1 USGPM) Seepage through drain tile may be taken at 1 USGPM per 100 sq. ft. of bed. (For sandy soil: 2 USGPM)

STEP 2 Determine the total head in feet.

If head is not specified, proceed on the following basis:

- 1)** Estimate the vertical rise from bottom of sump to the highest point in the discharge
- 2)** Add total friction loss in all piping, fittings and valves. (See friction loss table)

The total head is the vertical distance from bottom of the sump to the highest point in the discharge line plus friction loss in pipe, fittings and valves.

Dimensions not to be used for construction unless prints is certified by factory.

Example: A sewage pump is required to raise 50 USGPM a vertical distance of 14 ft. (bottom of sump to sewer). The 2½" discharge line will be 16⁹/₁₆ ft. long and contain 4 elbows at 90°, 1 check valve and 1 gate valve.

Sum of actual pipe plus equivalent straight pipe in fittings and valves (See chart 2 below) is given below:

- 1 x 2½" Discharge Pipe @ 16.6 = 16.6 Lin. ft.
- 4 x 2½" 90° Elbows @ 6.4 = 25.6 Lin. ft.
- 1 x 2½" Check valve @ 26.4 = 26.4 Lin. ft.
- 1 x 2½" Gate valve @ 1.4 = 1.4 Lin. ft.
- Total = 70.0 Lin. ft.

FRICION LOSS (CHART 1) = $\frac{70 \times 3.32 \text{ ft}}{100} = 2.32$

Vertical Rise = 14.00 ft.
Total Head = 16.32 ft

(CHART 1) LOSS OF HEAD IN FEET DUE TO FRICTION PER 100 FEET OF 15 YEAR OLD SMOOTH IRON PIPE

G.P.M.	1 Inch	1¼ Inch	1½ Inch	2 Inch	2½ Inch	3 Inch	4 Inch	5 Inch	6 Inch	8 Inch	10 Inch	12 Inch	G.P.M.
5	3.25	0.84	0.40										5
10	11.7	3.05	1.43	0.50	0.17	0.07							10
15	25.0	6.50	3.0	1.08	0.36	0.15							15
20	42.0	11.1	5.2	1.82	0.61	0.25							20
25	64.0	16.6	7.8	2.73	0.92	0.38							25
30	89.0	23.5	11.0	3.84	1.29	0.54							30
35	119.0	31.2	14.7	5.1	1.72	0.71							35
40	152.0	40.0	18.8	6.6	2.20	0.91	0.22						40
45		50	23.2	8.2	2.80	1.15	0.28						45
50		60	28.4	9.9	3.32	1.38	0.34						50
70		113	53.0	18.4	6.21	2.57	0.63	0.21					70
75			60.0	20.9	7.1	3.05	0.73	0.24					75
100			102	35.8	12.0	4.96	1.22	0.41	0.14				100
120			143	50.0	16.8	7.0	1.71	0.58	0.25				120
125				54	18.2	7.6	1.86	0.64	0.28				125
150				76	25.5	10.5	2.55	0.88	0.32				150
175				102	23.8	14.0	3.44	1.18	0.48				175
200				129	43.1	17.8	4.40	1.48	0.62				200
225					54.3	22.3	5.45	1.86	0.74				225
250					66	27.2	6.72	2.24	0.92	0.22			250
270						31.3	7.70	2.60	1.13	0.25			270
275						32.5	7.99	2.72	1.15	0.27			275
300						38.0	9.30	3.14	1.29	0.32			300
350							12.32	4.19	1.75	0.42			350
400							16.00	5.40	2.21	0.54			400
450							19.80	6.70	2.65	0.68	0.21		450
470							22.40	7.22	2.90	0.75	0.24		470
475							22.96	7.42	2.95	0.76	0.25		475
500							24.00	8.12	3.30	0.82	0.28	0.11	500
550								9.60	3.93	0.97	0.33	0.14	550
600								11.30	4.70	1.14	0.39	0.15	600
650								13.20	5.40	1.34	0.46	0.19	650
700								15.10	6.20	1.54	0.52	0.22	700
750								17.20	7.00	1.74	0.59	0.24	750
800									8.00	1.97	0.67	0.27	800
850									8.95	2.28	0.75	0.31	850
900									10.11	2.46	0.83	0.34	900
950									10.80	2.87	0.91	0.38	950
1000									12.04	3.02	1.01	0.41	1000
1050									13.30	3.21	1.00	0.44	1050
1100									14.31	3.51	1.20	0.49	1100
1150									15.60	3.84	1.34	0.53	1150
1200									16.69	4.15	1.46	0.57	1200

(CHART 2) FRICTION IN FITTINGS REDUCED TO EQUIVALENT FEET OF STRAIGHT PIPE

	NOMINAL SIZE IN INCHES											
	1 Inch	1¼ Inch	1½ Inch	2 Inch	2½ Inch	3 Inch	4 Inch	5 Inch	6 Inch	8 Inch	10 Inch	12 Inch
90° Elbow	2.8	3.7	4.3	5.5	6.4	8.2	11.0	13.5	16.0	21.0	26.0	32.0
45° Elbow	1.3	1.7	2.0	2.6	3.0	3.8	5.0	6.2	7.5	10.0	13.0	15.0
Tee-Side Outlet	5.6	7.5	9.1	12.0	13.5	17.0	22.0	27.5	33.0	43.5	55.0	66.0
Close Return Bend	6.3	8.4	10.2	13.0	15.0	18.5	24.0	31.0	37.0	49.0	62.0	73.0
Gate Valve	.6	.8	.9	1.2	1.4	1.7	2.3	2.9	3.5	4.5	5.7	6.8
Globe Valve	27.0	37.0	43.0	55.0	66.0	82.0	115.0	135.0	165.0	215.0	280.0	335.0
Check Valve	10.5	13.2	15.8	21.1	26.4	31.7	42.3	52.8	63.4	81.0	105.0	125.0
Foot Valve	24.0	33.0	38.0	46.0	55.0	64.0	75.0	76.0	76.0	76.0	76.0	76.0

Dimensions not to be used for construction unless prints is certified by factory.



FLO FAB Selecting the Right Pump

LINE VOLUMES IN USGPM PER 100 FEET OF PIPE LENGTH

Pipe Sizes	SDR-26 PVC	SDR-21 PVC	Sch. 40 PVC
1 1/4" 32 mm	9.57	9.13	7.76
1 1/2" 40 mm	12.55	11.97	10.57
2" 50 mm	19.64	18.77	17.44
2 1/2" 65 mm	28.65	27.68	24.91
3" 80 mm	42.55	40.92	38.39
4" 100 mm	70.39	67.47	66.12
6" 150 mm	152.6	146.23	150
8" 200 mm	258	248.11	N/A

Note: The value for Velocity and Friction Loss/100 feet used in this table are based on plastic pipe manufacturers and the Plastic Pipe Institute's suggested values and conversions for PVC type SDR-26 pipe; SDR-21 pipe; and PVC Schedule 40 pipe.

V = Velocity in ft/sec.
H_f = Head Loss in ft./100 ft of pipe

Flow GPM	1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"		8"		
	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	V	H _f	
1	.371	.111																	
2	.743	.380	.429	.102															
3	1.11	.775	.644	.208	.473	.099													
4	1.49	1.31	.858	.346	.630	.164													
5	1.86	1.92	1.07	.515	.788	.240													
6	2.23	2.70	1.29	.714	.946	.334	.574	.102											
8	2.97	4.59	1.72	1.19	1.26	.556	.765	.168											
10	3.71	6.90	2.15	1.78	1.58	.834	.956	.249	.670	.106									
15	5.57	14.7	3.22	3.76	2.37	1.74	1.43	.516	1.01	.217									
20	7.43	25.2	4.29	6.42	3.16	2.96	1.91	.866	1.34	.365	.868	.129							
25	9.28	38.6	5.37	9.74	3.94	4.46	2.39	1.29	1.68	.540	1.09	.191							
30			6.44	13.6	4.73	6.27	2.87	1.81	2.01	.755	1.30	.264							
35			7.51	18.2	5.52	8.40	3.35	2.42	2.35	1.01	1.52	.348	.882	.095					
40			8.59	23.6	6.30	10.7	3.83	3.12	2.68	1.28	1.74	.444	1.01	.120					
45			9.67	29.5	7.09	13.5	4.30	3.85	3.02	1.54	1.95	.552	1.13	.148					
50					7.88	16.5	4.78	4.68	3.35	1.93	2.17	.665	1.26	.175					
60					9.47	23.6	5.74	6.62	4.02	2.72	2.60	.938	1.51	.247					
70							6.70	8.86	4.69	3.67	3.04	1.25	1.76	.330					
80							7.65	11.5	5.36	4.69	3.47	1.59	2.02	.415					
90							8.60	14.3	6.03	5.83	3.91	1.99	2.27	.517					
100									6.70	7.13	4.34	2.42	2.52	.627	1.11	.083			
125									8.38	10.9	5.43	3.72	3.15	.959	1.39	.127			
150											6.51	5.16	3.78	1.34	1.67	.178			
175											7.60	6.90	4.41	1.79	1.94	.236			
200											8.68	8.93	5.04	2.27	2.22	.300			
225											9.77	11.2	5.67	2.84	2.50	.374	1.44	.099	
250													6.30	3.37	2.78	.450	1.60	.118	
275													6.93	4.13	3.05	.540	1.76	.141	
300													7.56	4.87	3.33	.635	1.92	.166	
325													8.19	5.70	3.61	.738	2.08	.192	
350													8.82	6.56	3.89	.848	2.24	.219	
375															4.16	.960	2.40	.250	
400															4.44	1.09	2.56	.280	

STEP 3 Select the required pump size and model.

SERIES SUP @ 1750 RPM

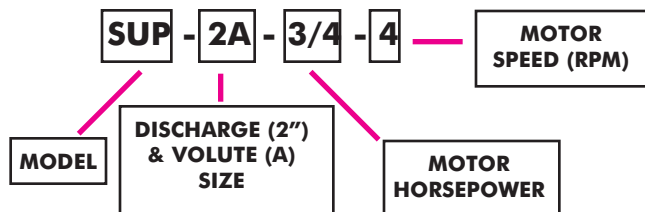
Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-2A-1/2-4	15	30	1/2	2
SUP-2A-3/4-4		41	3/4	2
SUP-2A-1-4		52	1	2
SUP-2C-1 1/2-4		59	1 1/2	2
SUP-2A-1/2-4	30	28	1/2	2
SUP-2A-3/4-4		35	3/4	2
SUP-2A-1-4		47	1	2
SUP-2A-1 1/2-4		52	1 1/2	2
SUP-2C-2-4	65	2	2	
SUP-2A-1/2-4	40	26	1/2	2
SUP-2A-3/4-4		32	3/4	2
SUP-2A-1-4		42	1	2
SUP-2A-1 1/2-4		50	1 1/2	2
SUP-2C-2-4	62	2	2	
SUP-2A-1/2-4	50	23	1/2	2
SUP-2A-3/4-4		30	3/4	2
SUP-2A-1-4		38	1	2
SUP-2A-1 1/2-4		47	1 1/2	2
SUP-2C-2-4	58	2	2	
SUP-2A-1/2-4	60	21	1/2	2
SUP-2A-3/4-4		24	3/4	2
SUP-2A-1-4		35	1	2
SUP-2A-1 1/2-4		45	1 1/2	2
SUP-2C-2-4	51	2	2	
SUP-2A-1/2-4	75	17	1/2	2
SUP-2A-3/4-4		22	3/4	2
SUP-2A-1-4		27	1	2
SUP-2A-1 1/2-4		40	1 1/2	2
SUP-2C-2-4	46	2	2	
SUP-2C-3-4	56	3	2	
SUP-2A-1/2-4	100	10	1/2	2
SUP-2A-3/4-4		15	3/4	2
SUP-2A-1-4		20	1	2
SUP-2A-1 1/2-4		29	1 1/2	2
SUP-2C-2-4	42	2	2	
SUP-2C-3-4	52	3	2	

SERIES SUP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-3F-3/4-4	125	12	3/4	3
SUP-3F-1-4		19	1	3
SUP-3F-1 1/2-4		26	1 1/2	3
SUP-3F-2-4		33	2	3
SUP-3C-3-4		50	3	3
SUP-3F-1-4	150	16	1	3
SUP-3F-1 1/2-4		23	1 1/2	3
SUP-3F-2-4		31	2	3
SUP-3C-3-4		42	3	3
SUP-3C-5-4	66	5	3	
SUP-3F-1-4	200	7	1	3
SUP-3F-1 1/2-4		13	1 1/2	3
SUP-3F-2-4		25	2	3
SUP-3F-3-4		29	3	3
SUP-3K-3-4		34	3	3
SUP-3K-5-4		50	5	3
SUP-3K-7 1/2-4	55	7 1/2	3	
SUP-3L-7 1/2-4	61	7 1/2	3	
SUP-3F-1 1/2-4	250	10	1 1/2	3
SUP-3F-2-4		16	2	3
SUP-3F-3-4		25	3	3
SUP-3K-5-4		36	5	3
SUP-3K-7 1/2-4	52	7 1/2	3	
SUP-3L-10-4	65	10	3	
SUP-3L-15-4	88	15	3	
SUP-4K-2-4	300	11	2	4
SUP-4K-3-4		23	3	4
SUP-4K-5-4		35	5	4
SUP-4K-7 1/2-4		48	7 1/2	4
SUP-4L-10-4		71	10	4
SUP-4L-15-4		85	15	4

SERIES SUP VOLUTE SIZE
A = SMALL
C & F = MEDIUM
K & L = LARGE

MOTOR SPEED
4 = 4 POLE
1750 RPM
6 = 6 POLE
1150 RPM





FLO FAB Selecting the Right Pump - Series SUP (effluent) or SEP (sewage)

SERIES SUP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-4K-3-4	350	20	3	4
SUP-4K-5-4		32	5	4
SUP-4K-7 ¹ / ₂ -4		35	7 ¹ / ₂	4
SUP-4L-7 ¹ / ₂ -4		47	7 ¹ / ₂	4
SUP-4L-10-4		65	10	4
SUP-4L-15-4		80	15	4
SUP-4K-3-4	400	18	3	4
SUP-4K-5-4		25	5	4
SUP-4K-7 ¹ / ₂ -4		30	7 ¹ / ₂	4
SUP-4L-7 ¹ / ₂ -4		42	7 ¹ / ₂	4
SUP-4L-10-4		61	10	4
SUP-4L-15-4		75	15	4
SUP-4L-5-4	500	23	5	4
SUP-4L-7 ¹ / ₂ -4		36	7 ¹ / ₂	4
SUP-4L-10-4		55	10	4
SUP-4L-15-4		71	15	4
SUP-4L-20-4		81	20	4

SERIES SUP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-2A-1/4-6	50	10	1/4	2
SUP-2A-1/3-6		13	1/3	2
SUP-2A-1/2-6		18	1/2	2
SUP-2C-3/4-6		30	3/4	2
SUP-2C-1-6		38	1	2
SUP-2A-1/4-6	60	6	1/4	2
SUP-2A-1/3-6		12	1/3	2
SUP-2A-1/2-6		14	1/2	2
SUP-2C-3/4-6		24	3/4	2
SUP-2C-1-6		30	1	2
SUP-2C-1 ¹ / ₂ -6		38	1 ¹ / ₂	2
SUP-2A-1/3-6	75	9	1/3	2
SUP-2A-1/2-6		12	1/2	2
SUP-2C-3/4-6		22	3/4	2
SUP-2C-1-6		29	1	2
SUP-2C-1 ¹ / ₂ -6		37	1 ¹ / ₂	2
SUP-2C-3/4-6	100	16	3/4	2
SUP-2C-1-6		24	1	2
SUP-2C-1 ¹ / ₂ -6		33	1 ¹ / ₂	2
SUP-3F-3/4-6	125	14	3/4	3
SUP-3K-1-6		18	1	3
SUP-3K-1 ¹ / ₂ -6		25	1 ¹ / ₂	3
SUP-3F-3/4-6	150	9	3/4	3
SUP-3F-1-6		13	1	3
SUP-3K-1 ¹ / ₂ -6		21	1 ¹ / ₂	3
SUP-3K-2-6		25	2	3
SUP-3L-3-6		33	3	3
SUP-3L-5-6		42	5	3
SUP-3K-1-6	200	10	1	3
SUP-3K-1 ¹ / ₂ -6		16	1 ¹ / ₂	3
SUP-3L-2-6		22	2	3
SUP-3L-3-6		31	3	3
SUP-3L-5-6		40	5	3
SUP-3L-1 ¹ / ₂ -6	250	14	1 ¹ / ₂	3
SUP-3L-2-6		19	2	3
SUP-3L-3-6		27	3	3
SUP-3L-5-6		37	5	3

SERIES SUP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-2A-1/4-6	15	15	1/4	4
SUP-2A-1/3-6		18	1/3	2
SUP-2A-1/2-6		23	1/2	2
SUP-2C-3/4-6		36	3/4	2
SUP-2C-1-6		42	1	2
SUP-2A-1/4-6	30	13	1/4	2
SUP-2A-1/3-6		17	1/3	2
SUP-2A-1/2-6		22	1/2	2
SUP-2C-3/4-6		35	3/4	2
SUP-2C-1-6		41	1	2
SUP-2A-1/4-6	40	11	1/4	2
SUP-2A-1/3-6		14	1/3	2
SUP-2A-1/2-6		22	1/2	2
SUP-2C-3/4-6		33	3/4	2
SUP-2C-1-6		40	1	2

SERIES SUP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SUP-4L-1 ¹ / ₂ -6	300	11	1 ¹ / ₂	4
SUP-4L-2-6		15	2	4
SUP-4L-3-6		25	3	4
SUP-4L-5-6		33	5	4
SUP-4L-2-6	350	13	2	4
SUP-4L-3-6		21	3	4
SUP-4L-5-6		30	5	4
SUP-4L-2-4	400	12	2	4
SUP-4L-3-4		20	3	4
SUP-4L-5-4		27	5	4
SUP-4L-3-4	500	15	3	4
SUP-4L-5-4		23	5	4

SERIES SEP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4F-3/4-4	50	21	³ / ₄	4
SEP-4F-1-4		26	1	4
SEP-4F-1 ¹ / ₂ -4		33	1 ¹ / ₂	4
SEP-4F-2-4		38	2	4
SEP-4F-3-4		44	3	4
SEP-4A-5-4		58	5	4
SEP-4F-3/4-4	75	18	³ / ₄	4
SEP-4F-1-4		25	1	4
SEP-4F-1 ¹ / ₂ -4		32	1 ¹ / ₂	4
SEP-4F-2-4		37	2	4
SEP-4F-3-4		43	3	4
SEP-4A-5-4		56	5	4
SEP-4F-3/4-4	100	15	³ / ₄	4
SEP-4F-1-4		23	1	4
SEP-4F-1 ¹ / ₂ -4		30	1 ¹ / ₂	4
SEP-4F-2-4		35	2	4
SEP-4F-3-4		42	3	4
SEP-4A-5-4		55	5	4

SERIES SEP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4F-3/4-4	125	12	³ / ₄	4
SEP-4F-1-4		20	1	4
SEP-4F-1 ¹ / ₂ -4		26	1 ¹ / ₂	4
SEP-4F-2-4		33	2	4
SEP-4F-3-4		38	3	4
SEP-4A-5-4		53	5	4
SEP-4F-1-4	150	16	1	4
SEP-4F-1 ¹ / ₂ -4		23	1 ¹ / ₂	4
SEP-4F-2-4		31	2	4
SEP-4F-3-4		36	3	4
SEP-4A-5-4	200	52	5	4
SEP-4C-7 ¹ / ₂ -4		62	7 ¹ / ₂	4
SEP-4F-1-4	250	7	1	4
SEP-4F-1 ¹ / ₂ -4		15	1 ¹ / ₂	4
SEP-4F-2-4		25	2	4
SEP-4F-3-4		29	3	4
SEP-4A-5-4		47	5	4
SEP-4C-7 ¹ / ₂ -4		60	7 ¹ / ₂	4
SEP-4A-1 ¹ / ₂ -4	300	8	1 ¹ / ₂	4
SEP-4A-2-4		16	2	4
SEP-4A-3-4		25	3	4
SEP-4A-5-4		42	5	4
SEP-4A-7 ¹ / ₂ -4		50	7 ¹ / ₂	4
SEP-4C-10-4		70	10	4
SEP-4C-15-4	350	86	15	4
SEP-4A-2-4		9	2	4
SEP-4A-3-4		20	3	4
SEP-4A-5-4		35	5	4
SEP-4C-7 ¹ / ₂ -4		49	7 ¹ / ₂	4
SEP-4C-10-4		68	10	4
SEP-4C-15-4	400	83	15	4
SEP-4A-3-4		16	3	4
SEP-4A-5-4		30	5	4
SEP-4C-7 ¹ / ₂ -4		48	7 ¹ / ₂	4
SEP-4C-10-4		65	10	4
SEP-4C-15-4		80	15	4

SERIES SEP VOLUTE SIZE

F = SMALL
A & C = MEDIUM
E & H = LARGE

MOTOR SPEED

4 = 4 POLE
1750 RPM
6 = 6 POLE
1150 RPM



SERIES SEP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4C-3-4	400	15	3	4
SEP-4C-5-4		29	5	4
SEP-4C-7 ^{1/2} -4		45	7 ^{1/2}	4
SEP-4C-10-4		61	10	4
SEP-4C-15-4		75	15	4
SEP-4C-20-4		82	20	4
SEP-4C-5-4	500	23	5	4
SEP-4C-7 ^{1/2} -4		38	7 ^{1/2}	4
SEP-4C-10-4		55	10	4
SEP-4C-15-4		70	15	4
SEP-4C-20-4		77	20	4
SEP-4E-25-4		88	25	4
SEP-4E-30-4		102	30	4
SEP-4E-40-4	120	40	4	
SEP-5C-5-4	600	17	5	5
SEP-5C-7 ^{1/2} -4		30	7 ^{1/2}	5
SEP-5C-10-4		50	10	5
SEP-5C-15-4		64	15	5
SEP-5C-20-4		72	20	5
SEP-5E-25-4		82	25	5
SEP-5E-30-4		100	30	5
SEP-5E-40-4		115	40	5
SEP-5E-15-4	800	43	15	5
SEP-5E-20-4		60	20	5
SEP-5E-25-4		68	25	5
SEP-5E-30-4		88	30	5
SEP-5E-40-4		110	40	5
SEP-6H-15-4	1000	40	15	6
SEP-6H-20-4		50	20	6
SEP-6H-25-4		62	25	6
SEP-6H-30-4		78	30	6
SEP-6H-40-4		100	40	6
SEP-6H-20-4	1200	42	20	6
SEP-6H-25-4		55	25	6
SEP-6H-30-4		72	30	6
SEP-6H-40-4		90	40	6

SERIES SEP @ 1750 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-6H-20-4	1400	30	20	6
SEP-6H-25-4		42	25	6
SEP-6H-30-4		60	30	6
SEP-6H-40-4		80	40	6
SEP-6H-30-4	1600	48	30	6
SEP-6H-40-4		72	40	6

SERIES SEP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4F-3/4-6	50	16	³ / ₄	4
SEP-4A-1-6		28	1	4
SEP-4A-1 ^{1/2} -6		31	1 ^{1/2}	4
SEP-4C-3-6		36	3	4
SEP-4E-5-6		48	5	4
SEP-4E-7 ^{1/2} -6		61	7 ^{1/2}	4
SEP-4F-3/4-6	75	15	³ / ₄	4
SEP-4A-1-6		23	1	4
SEP-4A-1 ^{1/2} -6		29	1 ^{1/2}	4
SEP-4C-3-6		35	3	4
SEP-4E-5-6		46	5	4
SEP-4E-7 ^{1/2} -6		59	7 ^{1/2}	4
SEP-4F-3/4-6	100	13	³ / ₄	4
SEP-4A-1-6		20	1	4
SEP-4A-1 ^{1/2} -6		27	1 ^{1/2}	4
SEP-4C-3-6		33	3	4
SEP-4E-5-6		44	5	4
SEP-4E-7 ^{1/2} -6		58	7 ^{1/2}	4
SEP-4F-3/4-6	125	10	³ / ₄	4
SEP-4A-1-6		18	1	4
SEP-4A-1 ^{1/2} -6		25	1 ^{1/2}	4
SEP-4C-3-6		31	3	4
SEP-4E-5-6		42	5	4
SEP-4E-7 ^{1/2} -6		57	7 ^{1/2}	4

SERIES SEP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4F-3/4-6	150	8	3/4	4
SEP-4A-1-6		13	1	4
SEP-4A-1 1/2-6		21	1 1/2	4
SEP-4A-2-6		24	2	4
SEP-4C-3-6		30	3	4
SEP-4E-5-6		40	5	4
SEP-4E-7 1/2-6		56	7 1/2	4
SEP-4A-1 1/2-6		200	16	1 1/2
SEP-4A-2-6	22		2	4
SEP-4C-3-6	28		3	4
SEP-4C-5-6	38		5	4
SEP-4E-7 1/2-6	54	7 1/2	4	
SEP-4A-1 1/2-6	250	14	1 1/2	4
SEP-4C-2-6		19	2	4
SEP-4C-3-6		26	3	4
SEP-4C-5-6		35	5	4
SEP-4E-7 1/2-6		50	7 1/2	4
SEP-4E-10-6		58	10	4
SEP-4C-2-6	300	15	2	4
SEP-4C-3-6		23	3	4
SEP-4C-5-6		31	5	4
SEP-4E-7 1/2-6		47	7 1/2	4
SEP-4E-10-6		54	10	4
SEP-4E-15-6		59	15	4
SEP-4C-2-6	350	13	2	4
SEP-4C-3-6		21	3	4
SEP-4C-5-6		28	5	4
SEP-4E-7 1/2-6		42	7 1/2	4
SEP-4E-10-6		50	10	4
SEP-4E-15-6		58	15	4
SEP-4C-2-6	400	12	2	4
SEP-4C-3-6		20	3	4
SEP-4C-5-6		24	5	4
SEP-4E-7 1/2-6		38	7 1/2	4
SEP-4E-10-6		44	10	4
SEP-4E-15-6		57	15	4

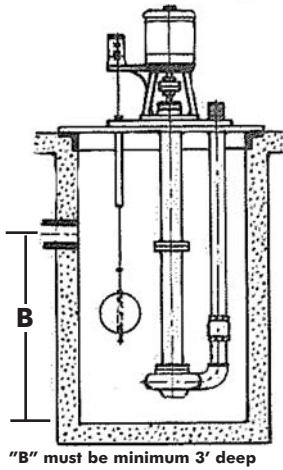
SERIES SEP @ 1150 RPM

Unit Model Number	Pump Capacity USGPM	Disch Head (ft)	Motor Hp	Disch Size (in)
SEP-4C-3-6	500	15	3	4
SEP-4C-5-6		23	5	4
SEP-4E-7 1/2-6		31	7 1/2	4
SEP-4E-10-6		42	10	4
SEP-4E-15-6		54	15	4
SEP-5E-5-6		600	16	5
SEP-5E-7 1/2-6	29		7 1/2	5
SEP-5E-10-6	40		10	5
SEP-5E-15-6	800	50	15	5
SEP-6H-5-6		13	5	6
SEP-6H-7 1/2-6		25	7 1/2	6
SEP-6H-10-6		36	10	6
SEP-6H-15-6		47	15	6
SEP-6H-7 1/2-6		1000	17	7 1/2
SEP-6H-10-6	29		10	6
SEP-6H-15-6	42		15	6
SEP-6H-10-6	1200	23	10	6
SEP-6H-15-6		35	15	6
SEP-6H-15-6	1400	28	15	6



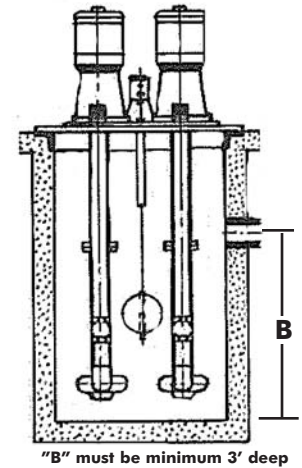
STEP 4 Select the required sumps, cover and curb frame.

Many specifications include dimensions as estimated by consultants or architects. Figures are usually based on both capacities and available space. Where dimensions are requested from the pump representative, it is suggested that square sumps be recommended. Both excavations and concrete (forms) are simplified and square shape is better suited to corner locations or positions adjacent to walls. Perhaps the only exception is the cast iron sump which is more readily available in round form. Unduly large sumps may permit settling of sewage solids but on the other hand, inadequate sumps definitely shorten the life of pumping equipment by too frequent on-off cycles. It is suggested that recommendations given below be regarded as basic.



SUMPS SUGGESTED MINIMUMS

Pump Size (in)	Square Sumps Simplex Units (in)	US Gal. per Foot of Depth	Pump Size (in)	Square Sumps Duplex Units (in)	US Gal. per Foot of Depth
1 - 1/2	24	30	1 - 1/2	36	68
2	30	47	2	42	92
2 1/2	30	47	2 1/2	42	92
3	36	68	3	48	120
4	36	68	4	48	120

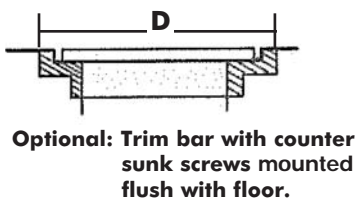
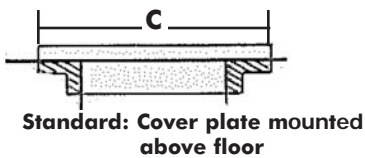


Dimension "B" should be at least 3'. This is to allow for reasonable pump-down plus submergence of casing at low level. Sump volume at depth "B" should also equal or exceed the capacity handled by pump in two minutes (Check against one pump on a duplex unit.)

Example: A 2" simplex pump is required to deliver 70 USGPM (140 gallons in 2 minutes) Make tentative selection of minimum sump which will accommodate the pump. Shown in the sump sugg. minimums, a 2" pump needs 30" sq., 47 US Gal. per ft. depth. Now check the selection to also be sure that depth "B" (3') contains at least the volume handled by pump in 2 minutes.

The calculation will be $3 \times 47 = 141$ gals (satisfactory).

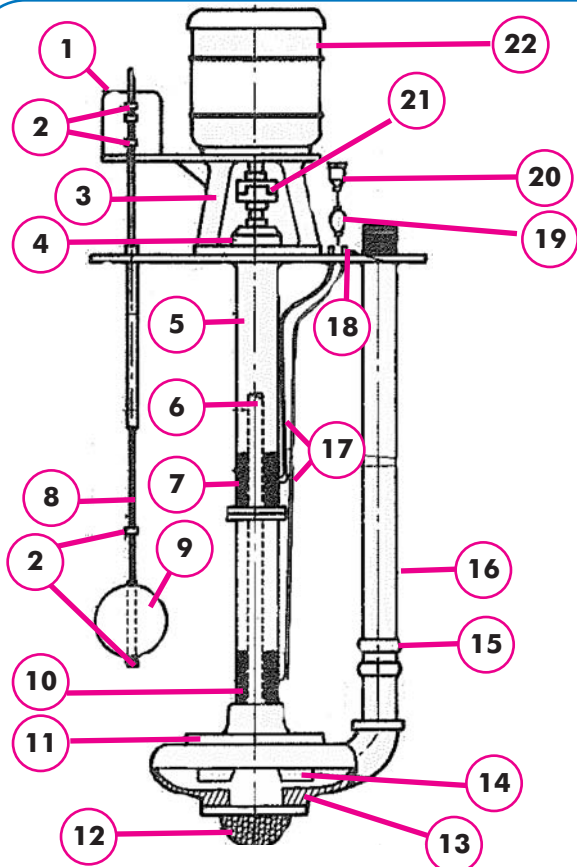
CURB FRAMES & COVER PLATES



Sump Size * Square (in)	US Gal. per Foot of Depth	STD Curb Frame (in)	Trim Bar Curb Frame (in)	Steel Cover Plate Thick (in)
24	30	28	29	3/8
30	47	34	35	3/8
36	68	40	41	3/8
42	92	46	47	3/8
48	120	53	54	3/8
54	150	60	60	3/8
60	188	66	66	1/2
72	270	78	78	1/2

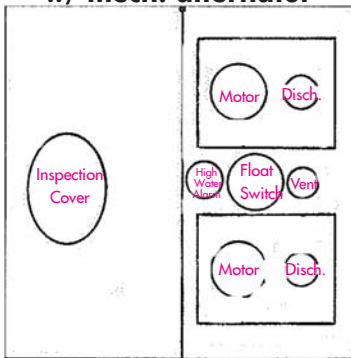
Sump basins of steel or cast iron are constructed with upper flanges to suit coverplates. All other sumps (usually concrete) should be fitted with steel curb frames to support coverplates and provide reasonably smooth surface for gaskets (sewage units)

The sumps suggested minimums table itemizes nominal sumps relative to pump sizes. Presented in curb frames and coverplates table is listings up to 72" square sumps and curb frames.



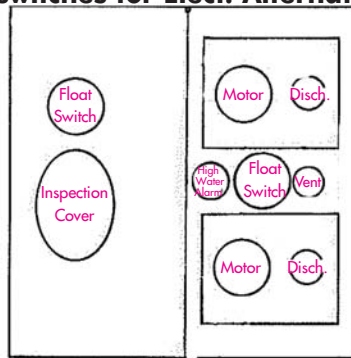
No	PARTS
1	Float Switch
2	Adj. Float Rod Collar
3	Motor Stand
4	Thrust Bearings
5	Column
6	Pump Shaft
7	Intermediate Bearing
8	Float Rod
9	Float ball
10	Lower Bearing
11	Yoke
12	Strainer (Except on Sewage)
13	Casing
14	Impeller
15	Dresser Coupling
16	Discharge Pipe
17	Lubricant Pipes
18	Grease Fittings (on grease lub. only)
19	Solenoid Valve (on oil lub. only)
20	Oil Reservoir
21	Flexible Coupling
22	Motor

Standard unit w/ mech. alternator



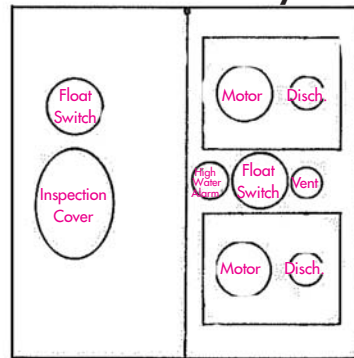
Duplex Unit

Standard unit w/2 floats switches for Elect. Alternator

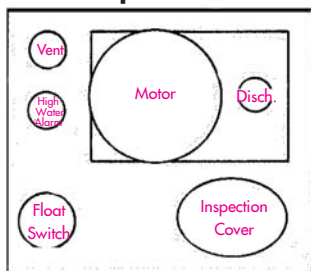


Duplex Unit

Standard unit w/mech. alternator and 1 float switch for time delay relay

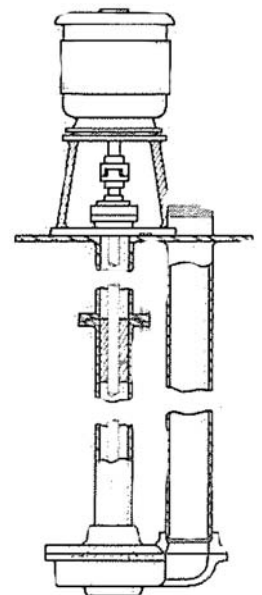


Duplex Unit



Simplex Unit

Standard unit w/ float switch.



Sectional View



FLO FAB Construction & Installation

FLOAT SWITCH

Float Switch Base

$\frac{9}{16}$ " Dia. 4 holes on $8\frac{3}{4}$ " B.C.

$9\frac{3}{4}$ "

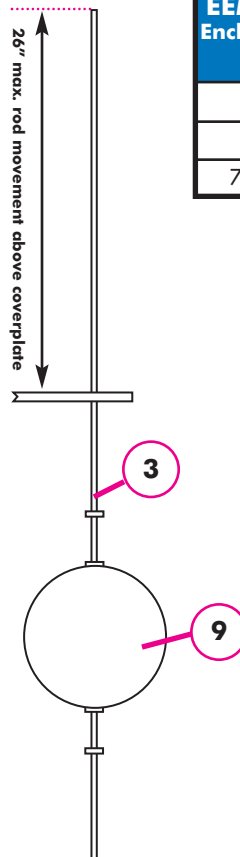
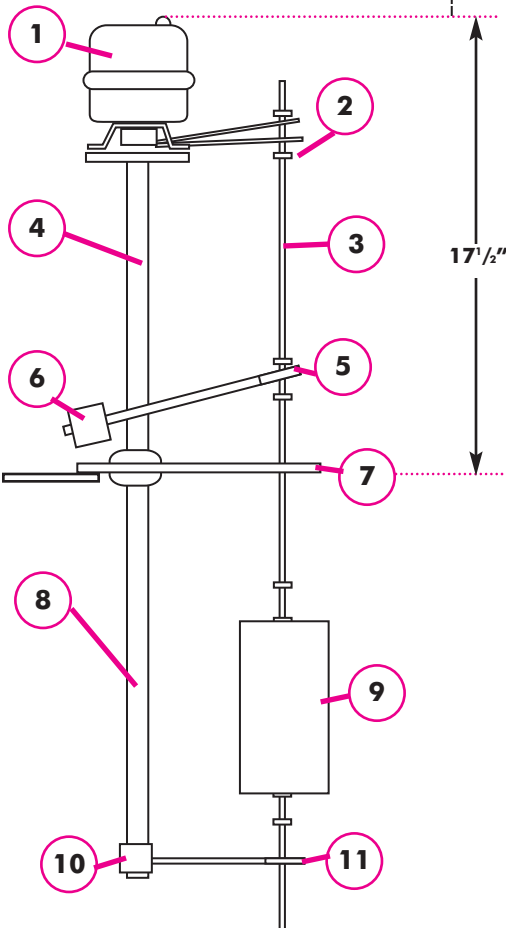
$7\frac{3}{4}$ " Dia. Cutout thru coverplate

Ball float assembly is for pumps with 1, 2 or 3ft. column. All others use the cylindrical float assembly.

Standard float rods allow stop settings down to pump casing center line.

Balance weight assembly is standard for 7ft. setting ans over. Switches are not included with the pump unless specified.

Refer to sales office for other control information and/or ratings.



EEMAC Enclosure	Type	Square "D" Model	
		Float Switch	Mechanical Alternator
1	General Purpose	9036 GG2	9038 AG1
4	Water Tight	9036 DW1	9038 AW1
7, 9	Explosion Proof	9036 DR1	9038 AR1

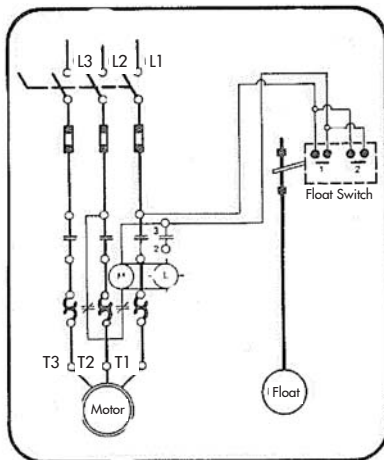
Part Name	Standard Material	Optional Stainless Steel	
1	Float Switch	---	
2	Float Rod Stop	Brass	316 SS
3	Float Rod	Brass	316 SS
4	Float Switch Bracket	Steel	Steel
5	Bal. Weight Lever	Steel	Steel
6	Balance Weight	Cast Iron	Cast Iron
7	Float Switch Base	Steel	Steel
8	Support Pipe	Steel	316 SS
9	Float *	Copper	316 SS
10	Collar	316 SS	316 SS
11	Eyebolt Guide	Steel	316 SS

* Cylindrical or Ball Float

Dimensions not to be used for construction unless prints is certified by factory.

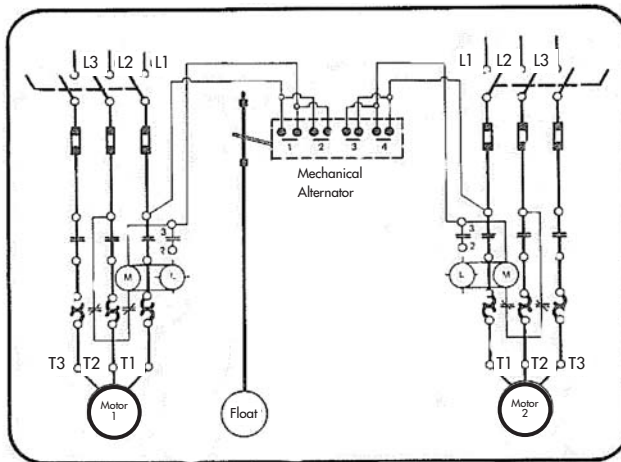
MECHANICAL ALTERNATOR

A coverplate mounted, start-stop device for the control of duplex pumping unit. This device consists of two double pole switches and mechanical alternating mechanism contained in one enclosure. Actuation is by a single ball float. The alternator first cycles pump "A" then Pump "B" then pump "A" again, etc. Wear is thereby evenly distributed between the two pumping units. In event of liquid rising in sump to an emergency high level, both pumps go into operation and continue until level is normalized. Alternate operation is then automatically restored. The mechanical alternator being directly float operated must be mounted over the sump.



**Simplex Unit
with single float switch**

- 1) Pump starts when water level rises to operate float switch and stops when water level falls
- 2) Operating levels are set by adjusting the limit stops on float rod



**Duplex Unit
with mechanical alternator**

- 1) Working pump starts
- 2) Should water level continue to rise, standby pumps are automatically starts up in parallel.
- 3) Working and standby pumps are automatically alternated at the end of each pumping cycle.

1) A float switch and stand can be supplied for single pump level control. Switch enclosure can be supplied in NEMA I or NEMA IV

Note: Suitable disconnects should be installed ahead of float switch.

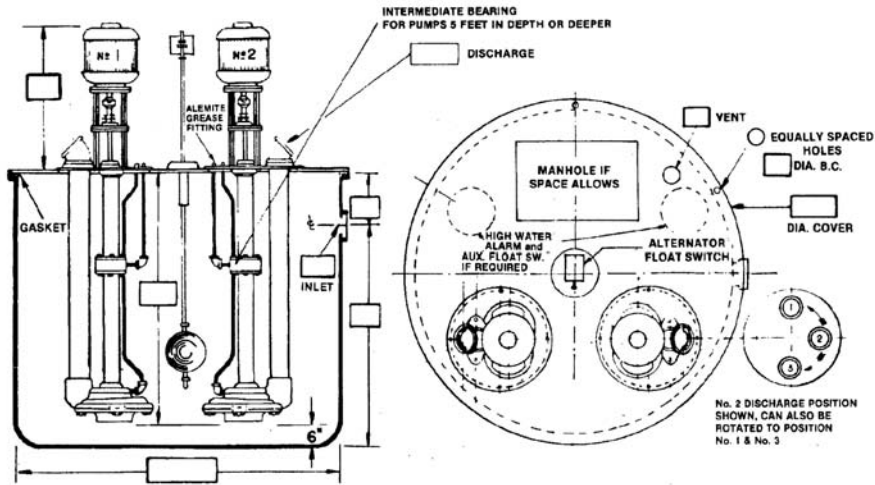
2) A float operated mechanical alternator switch and stand can be furnished for sump level control. This switch alternates pumps on each cycle and starts both pumps if one pump can not handle the flow. Switch enclosure can be supplied in NEMA I or NEMA IV.

Note: Suitable disconnects should be installed ahead of alternator.

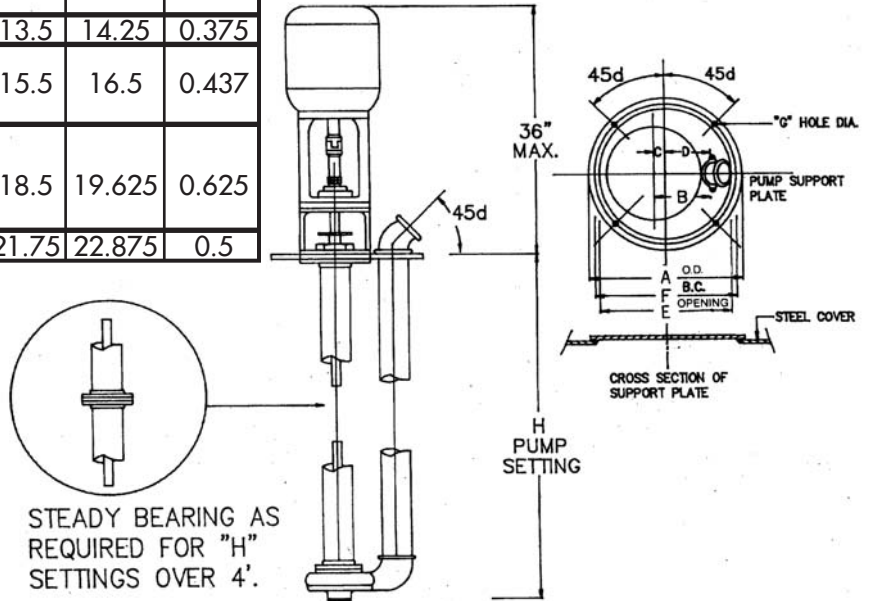
Note: A setting between start and stop of 24" is recommended to allow pump to operate at least 2 minutes per cycle.



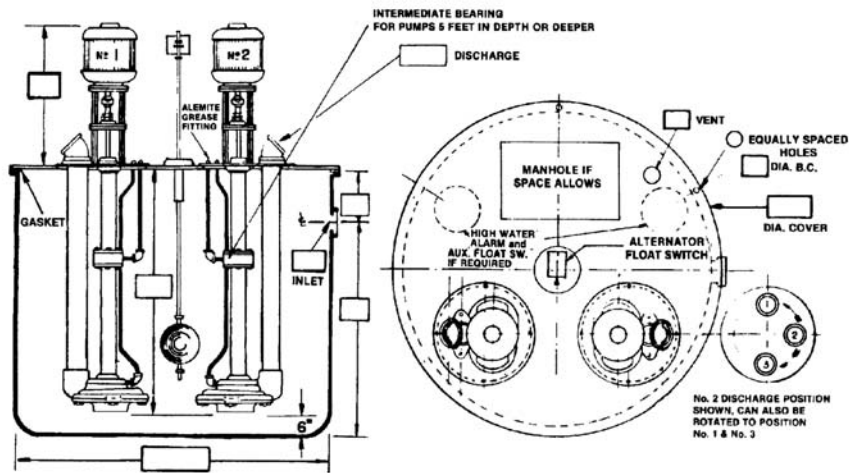
FLO FAB Series SUP (Effluent) Mounting Details



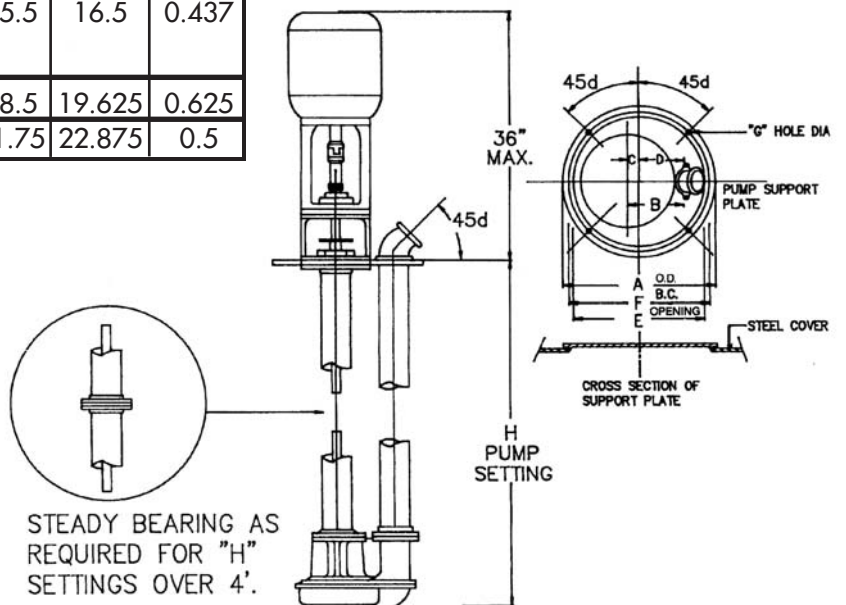
Suspension Plate	Models	A	B	C	D	E	F	G
SP-1250	2579	12.5	5.5	1.687	3.812	11	11.75	0.375
	3511							
SP-1500	4011	15	6	1.5	4.5	13.5	14.25	0.375
	2553							
SP-1750	3553	17.5	6.5	1.5	5	15.5	16.5	0.437
	4511							
	5033							
SP-2075	5057	20.75	8	2.375	5.625	18.5	19.625	0.625
	5511							
	5513							
SP-2400	6551	24	8.937	1.5	7.437	21.75	22.875	0.5



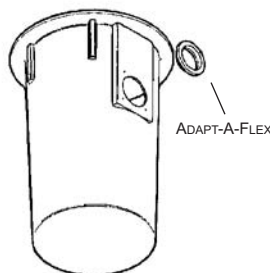
Series SEP (Sewage) Mounting Details FLO FAB



Suspension Plate	Models	A	B	C	D	E	F	G
SP-1500	1551	15	6	1.5	4.5	13.5	14.25	0.375
SP-1750	2551	17.5	6.5	1.5	5	15.5	16.5	0.437
	3551							
	4051							
SP-2075	5057	20.75	8	2.375	5.625	18.5	19.625	0.625
SP-2400	6551	24	8.937	1.5	7.437	21.75	22.875	0.5

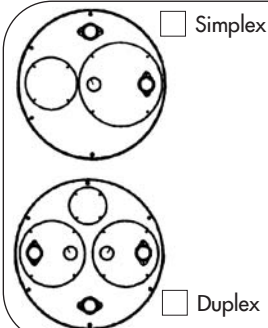


POLYETHYLENE BASIN



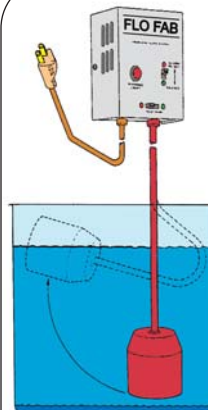
- Polyethylene
 - Fiberglass
- Models**
- 1830 -- 30 gal.
 - 2436 -- 70 gal.
 - 3636 -- 159 gal.
 - 4848 -- 376 gal.

STEEL BASIN COVERS



- Simplex
 - Duplex
- Models**
- 18l
 - 24l
 - 36l
 - 48l

TANK ALERT FLOAT

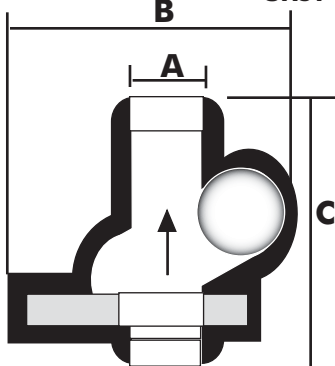


- Nema 1 Compliance in a metal alarm panel.
- When used with a pump application, the Tank Alert may be connected to a circuit breaker other than the pump circuit.
- This allows the Tank Alert to operate even if the pump circuit should fail.
- Models**
- 101 HW
 - 101 LW
 - With dry contact
 - Without dry contact

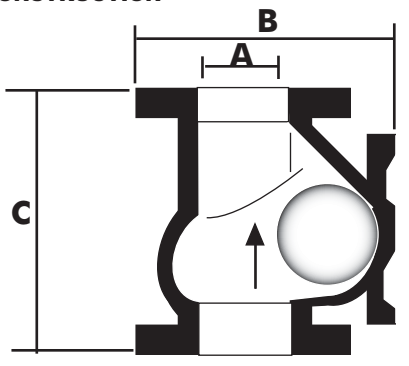
120/1/60

CHECK VALVES

CAST IRON CONSTRUCTION

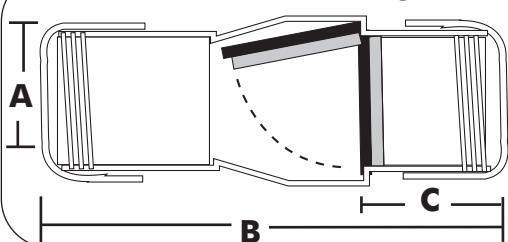


TYPE CB0300-CB0400



TYPE CB0125-CB0200

PVC CONSTRUCTION TYPE CVP



CONTROL PANEL

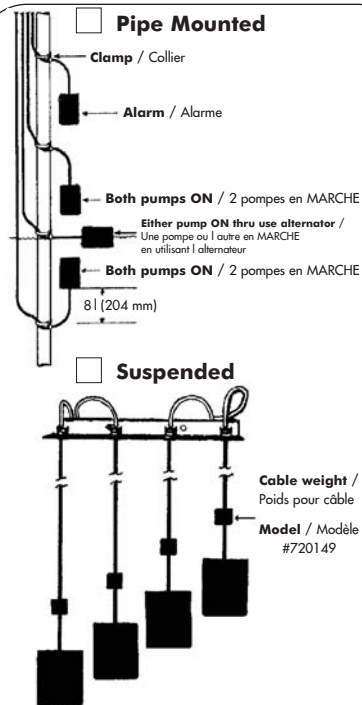


FLO FAB Standard UL or CSA - NEMA 1-enclosure. Includes main disconnect switch, internal circuit, breakers, transformer, low suction pressure switch and pilot light, hand-off auto switch, pump running light, current-relay, min. run timer, automatic transfer to lag pump circuit, lead pump selector switch, power on light, dry contact for remote signal.

Models

- Simplex (SSP) 115/1 208/3
- Duplex (DSP) 230/1 460/3
- Triplex (TSP) 575/3

MECHANICAL FLOAT SWITCH



Models

- 15' 720163 With plug
- 15' 720163 N/O Without plug
- 30' 720165 N/O

Bracket #720145

- Not included
- Included

Qty. : _____

Check Valves Models	A	B		C		Test PSI
		po	mm	po	mm	
CVP0125	1 1/4	5 1/4	132	1 1/8	28	
CVP0150	1 1/2	5 1/4	132	1 1/8	28	
CVP0200	2	9 3/4	245	2 1/4	70	
CVP0300	3	14	350	4	100	
CB0125	1 1/4 NPT	4 11/16	119	5 7/16	135	150
CB0150	1 1/2 NPT	4 11/16	119	5 7/16	135	150
CB0200	2 NPT	6 7/16	157	6 7/16	175	150
CB0300	3 Flanged	8 7/16	214	9 1/16	246	150
CB0400	4 Flanged	11 1/8	282	11 13/16	300	150

Typical Specifications for Series SUP - SEP FLO FAB

Furnish and install as shown on plans and drawings a vertical column pumps Series SUP (effluent) or SEP (sewage) as manufactured by FLO FAB.

Pumping unit shall have sealed and adjustable thrust bearing located above coverplate, sleeve guide bearings (48" maximum span) Densitite impeller, SG steel shaft and grease lubrication tubes and fittings. Sump dimensions shall be proportional to the required head. A curb frame may be needed (for concrete sumps). Each pump shall be driven by a drip-proof motor. Temperature rise at pump rating, to be in keeping with motor's manufacturer's guarantee.

For simplex unit, provide enclosed float switch with heavy copper float. Also furnish magnetic starter with overload protection for motor. Duplex unit to have a control panel with mechanical alternator in place of float switch. This device shall alternate pumps in normal operation or cut in both units if load should temporarily exceed the capacity of one pump.

Note: High water alarm should be used in critical locations.

Acceptable products: FLO FAB vertical column pump(s) Series SUP or SEP.

FF

FLO FAB



**Manufacturer of Pumps, Tanks, Heat Exchangers & Accessories
for HVAC Market After-Sales Parts and Services**

www.flofab.com

FLO-FAB INC
LAKE WORTH,
FLORIDA, USA

SEPTEMBER 2009