

# Pumps Plus – The Golf Pump Specialists

Intake Pipe Sizes & Pressure Drop, Velocity & Pressure Drop Charge, Motor Cable Size, Conversions, Formulas

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## Intake Pipe Sizes & Pressure Drop

Intake Line Sizes from Irrigation Pond to Wet Well Flow Rate in US GPM (drawdown in wet well not to exceed 6 inches)

Length of Pipe	Size of Corrugated Metal Pipe							
	10"	12"	15"	18"	21"	24"	30"	36"
25'	450	700	1400	2100	2900	4100	6300	9000
50'	300	475	1100	1700	2500	3400	5400	8100
100'		350	750	1200	1800	2500	4500	6750
150'			600	1000	1450	2000	3600	5400
200'			500	850	1250	1700	3150	4500

Length of Pipe	Size of Smooth Bore Steel, Concrete or PVC							
	8"	10"	12"	16"	18"	20"	24"	30"
25'	550	850	1250	1900	2500	3000	4500	
50'	475	750	1050	1700	2200	2600	3800	6200
100'	375	625	900	1400	1800	2200	3200	5200
150'		550	750	1200	1500	1800	2500	4300
200'			600	950	1200	1500	2200	3600

Friction loss in pipe fittings in terms of equivalent length in feet of straight pipe						
Pipe Size	Gate Valve	90 Degree Elbow	Long rad. 90 or 45	Std Tee thru flow	Std Tee branch flow	Butterfly Valve
1"	0.70	2.62	1.40	1.75	5.25	
1 1/4"	0.92	3.45	1.84	2.30	6.90	
1 1/2"	1.07	4.03	2.15	2.68	8.05	
2"	1.36	5.17	2.76	3.45	10.30	7.75
2 1/2"	1.65	6.17	3.29	4.12	12.30	9.26
3"	2.04	7.67	4.09	5.11	15.30	11.50
4"	2.66	10.10	5.37	6.71	20.10	15.10
6"	4.04	15.20	8.09	10.10	30.30	22.70
8"	5.32	20.00	10.60	13.30	39.90	29.90
10"	6.66	25.10	13.40	16.70	50.10	32.20
12"	7.96	29.80	15.90	19.90	59.70	34.80
14"	8.75	32.60	17.50	21.60	65.60	36.30

Pressure drop through flanged "Y" strainer based on use of .045					
GPM	6"	8"	10"	12"	14"
300	0.25				
400	0.45				
500	0.70	0.20	10"		
600	1.10	0.30			
700	1.35	0.45	0.17	12"	
800	1.90	0.58	0.21		
900	2.50	0.74	0.28	0.12	
1000	3.10	0.92	0.34	0.15	14"
1200		1.35	0.52	0.21	
1400		1.90	0.72	0.30	0.14
1600		2.60	0.98	0.40	0.17
1800		3.50	1.20	0.50	0.22
2000			1.50	0.62	0.28
2200			1.90	0.76	0.36
2400			2.30	0.92	0.41
2600			2.80	1.10	0.48
2800			3.30	1.30	0.56
3000			3.60	1.60	0.66
3200				1.80	0.76
3400				2.00	0.86
3600				2.20	0.96
3800				2.40	1.10
4000				2.60	1.20

Pressure drop (PSI) through a Cla-Val			
GPM	2"	3"	4"
100	3.5		4"
200	15	3	
300		7	2.5
400		13	4
500	6"		6
600			9
750	3		15
1000	5	8"	
1200	7		
1400	10	3	
1600		4	
1800		5.5	10"
2000		7	
2200		8	3
2400		10	3.5
2600			4
2800			4.5
3000			5
3500			7
4000			10

Pressure drop (PSI) through a Val-Matic wafer			
GPM	2"	2 1/2"	3"
50	0.75		3"
100	1.81	1.21	
125		1.73	0.95
150	4"	2.51	1.16
175			1.51
200	0.86		1.86
250	1.12		2.94
300	1.47	6"	
350	1.81		
400	2.33	0.73	
500		0.95	8"
600		1.21	
700		1.51	0.73
800		1.91	0.86
900		2.42	1.01
1000			1.12
1200			1.51
1400			1.91
1600			2.42

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## Velocity & Pressure Drop Charge

Velocity & Pressure Drop Charge												
Pressure Drop in psi per 100' of Pipe												
GPM	Vel. Ft/sec	Pres. drop	Vel. Ft/sec	Pres. drop	Vel. Ft/sec	Pres. drop	Vel. Ft/sec	Pres. drop	Vel. Ft/sec	Pres. drop	Vel. Ft/sec	Pres. drop
1"												
1 1/4"												
1 1/2"												
2	0.57	0.06										
3	0.86	0.14	0.54	0.04								
4	1.14	0.23	0.73	0.08	0.55	0.04						
5	1.43	0.35	0.91	0.12	0.69	0.06						
6	1.72	0.49	1.09	0.16	0.83	0.08						
8	2.29	0.84	1.45	0.28	1.10	0.14	0.71	0.05				
10	2.86	1.27	1.81	0.42	1.38	0.21	0.89	0.07	0.60	0.03		
15	4.29	2.68	2.72	0.89	2.07	0.45	1.33	0.15	0.90	0.06		
20	5.72	4.57	3.63	1.51	2.76	0.77	1.77	0.26	1.20	0.10	0.84	0.04
25			4.54	2.28	3.45	1.16	2.21	0.39	1.50	0.15	1.05	0.06
30	4"		5.45	3.20	4.15	1.62	2.65	0.54	1.81	0.22	1.26	0.09
35			6.35	4.25	4.83	2.16	3.10	0.72	2.10	0.29	1.49	0.11
40	0.99	0.04	7.26	5.45	5.52	2.76	3.54	0.92	2.41	0.37	1.68	0.15
45	1.10	0.05	8.17	6.77	6.20	3.43	3.98	1.14	2.71	0.45	1.90	0.16
50	1.23	0.06	9.08	8.23	6.90	4.17	4.42	1.39	3.01	0.56	2.11	0.22
60	1.48	0.09			8.29	5.84	5.30	1.95	3.61	0.88	2.57	0.31
70	1.72	0.11					6.19	2.59	4.21	1.04	2.96	0.41
80	1.97	0.15	6"				6.77	3.32	4.82	1.32	3.38	0.53
90	2.22	0.19					7.10	4.12	5.42	1.64	3.80	0.66
100	2.46	0.23	1.14	0.03			7.95	5.01	6.02	2.88	4.21	0.81
125	3.08	0.35	1.42	0.05	8"				7.50	3.00	5.27	1.21
150	3.70	0.49	1.71	0.07					9.03	3.24	6.33	1.70
175	4.31	0.65	1.99	0.10	1.17	0.02			10.05	3.64	7.37	2.25
200	4.93	0.84	2.27	0.13	1.34	0.03	10"				8.42	2.90
225	5.54	1.04	2.56	0.16	1.45	0.04					9.48	3.58
250	6.16	1.27	2.84	0.19	1.68	0.05	1.08	0.02			10.60	4.36
275	6.78	1.51	3.13	0.23	1.84	0.06	1.19	0.02	12"		11.60	5.21
300	7.39	1.77	3.41	0.27	2.01	0.07	1.29	0.02				
350	8.62	2.36	3.98	0.36	2.35	0.10	1.51	0.03	1.07	0.01		
400	9.85	3.03	4.55	0.46	2.68	0.12	1.73	0.04	1.23	0.02		
450	11.09	3.77	5.12	0.57	3.02	0.16	1.94	0.06	1.38	0.02		
500	12.32	4.58	5.69	0.70	3.35	0.19	2.16	0.06	1.53	0.03	14"	
550	13.55	5.46	6.26	0.83	3.69	0.23	2.37	0.08	1.69	0.03		
600	14.78	6.41	6.82	0.98	4.02	0.27	2.59	0.09	1.84	0.04	1.32	0.02
650			7.39	1.13	4.36	0.31	2.81	0.11	1.99	0.05	1.43	0.02
700			7.96	1.30	4.69	0.36	3.02	0.12	2.15	0.05	1.54	0.02
750			8.53	1.48	5.03	0.41	3.24	0.14	2.30	0.06	1.65	0.02
800			9.10	1.67	5.36	0.46	3.45	0.15	2.45	0.07	1.76	0.03
850			9.67	1.87	5.70	0.51	3.67	0.18	2.61	0.08	1.87	0.03
900			10.24	2.07	6.04	0.57	3.88	0.19	2.76	0.09	1.98	0.04
950			10.81	2.29	6.37	0.63	4.10	0.22	2.91	0.09	2.09	0.04
1000			11.37	2.52	6.71	0.70	4.32	0.24	3.07	0.10	2.20	0.05
1100			12.51	3.00	7.38	0.83	4.75	0.29	3.37	0.12	2.42	0.06
1200			13.65	3.53	8.05	0.98	5.18	0.33	3.68	0.15	2.64	0.06
1300			14.79	4.10	8.72	1.13	5.61	0.40	3.99	0.17	2.86	0.07
1400			15.92	4.70	9.39	1.30	6.04	0.44	4.29	0.19	3.08	0.09
1500					10.06	1.48	6.47	0.51	4.60	0.22	3.30	0.10
1600					10.73	1.66	6.91	0.57	4.91	0.25	3.52	0.11
1800					12.07	2.07	7.77	0.71	5.52	0.31	3.97	0.14
2000					13.41	2.51	8.63	0.88	6.13	0.38	4.41	0.16
2200					14.75	3.00	9.50	1.03	6.75	0.44	4.85	0.20
2400					16.09	3.52	10.36	1.21	7.36	0.52	5.29	0.23
2600							11.22	1.40	7.98	0.61	5.73	0.27
2800							12.09	1.61	8.59	0.70	6.17	0.31
3000							12.95	1.83	9.20	0.80	6.61	0.35

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## Motor Cable Size

Single Phase Motor Maximum Cable Length (motor to service entrance) (2)										
Motor Rating		Copper Wire Size (1)								
Volts	HP	14	12	10	8	6	4	2	0	00
115	1/3	130	210	340	540	840	1300	1920	2910	3540
	1/2	100	160	250	390	620	960	1460	2160	2630
230	1/3	550	880	1390	2190	3400	5250	7960	11770	
	1/2	400	650	1020	1610	2510	3880	5880	8720	
	3/4	300	480	760	1200	1870	2890	4370	6470	7870
	1	250	400	630	990	1540	2380	3610	5360	6520
	1.5	190	310	480	770	1200	1870	2850	4280	5240
	2	150	250	390	620	970	1530	2360	3620	4480
	3	120	190	300	470	750	1190	1850	2890	3610
	5	0	110	180	280	450	710	1110	1740	2170
	7.5	0	0	120	200	310	490	750	1140	1410
10	0	0	0	160	250	390	600	930	1160	
15	0	0	0	0	170	270	430	660	820	

(1) This table is based on copper wire. If aluminum wire is used it must be two sizes larger. Example: When the table calls for #12 copper wire you would use #10 aluminum wire.

(2) Single Phase control boxes may be connected at any point of the total cable length.

Three Phase Motor Maximum Cable Length (motor to service entrance)(3)												
Motor Rating		Copper Wire Size (1)										
Volts	HP	14	12	10	8	6	4	2	0	00	000	0000
230 V 60Hz	1.5	360	580	920	1450	2260	3510	0	0	0	0	0
	2	280	450	700	1110	1740	2710	4130	6200	0	0	0
	3	210	340	540	860	1340	2080	3170	4730	0	0	0
	5	130*	200	320	510	800	1240	1900	2850	3490	4200	5080
	7.5	0	140*	230	360	570	890	1350	2030	2480	2980	3600
	10	0	0	170*	270	420	660	1010	1520	1870	2260	2740
	15	0	0	0	180*	290	450	690	1040	1280	1540	1860
	20	0	0	0	140*	220*	350	530	810	990	1200	1450
	25	0	0	0	0	180*	280	430	650	800	970	1170
30	0	0	0	0	0	230*	350	540	660	800	970	
460 V 60 Hz	1.5	2620	4180	6580	0	0	0	0	0	0	0	0
	2	2030	3250	5110	8060	0	0	0	0	0	0	0
	3	1580	2530	3980	6270	0	0	0	0	0	0	0
	5	920	1480	2330	3680	5750	0	0	0	0	0	0
	7.5	660	1060	1680	2650	4150	0	0	0	0	0	0
	10	490	780	1240	1950	3060	4770	0	0	0	0	0
	15	330*	530	850	1340	2090	3260	0	0	0	0	0
	20	0	410*	650	1030	1610	2520	3860	5830	0	0	0
	25	0	0	520	830	1300	2030	3110	4710	0	0	0
	30	0	0	430*	660	1070	1670	2650	3980	4770	5780	7030
	40	0	0	0	500*	790	1240	1900	2860	3510	4230	5140
	50	0	0	0	410*	640*	1000	1540	2310	2840	3420	4140
60	0	0	0	0	540	850	130	1960	2400	2890	3500	
75	0	0	0	0	0	690*	1060	1600	1970	2380	2890	
100	0	0	0	0	0	0	790*	1190	1460	1770	2150	

(3) The portion of the total cable which is between the service entrance and a three phase motor starter should not exceed 25% of the total maximum length to assure reliable starter operation. Lengths marked\* meet the U.S. National Electrical Code ampacity only for individual conductor 75 C cable. Local code requirements may vary.

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## Conversions

Volume							
You Have:	To Obtain:						
Units	Cu. IN	Gallons	Cu. FT	Cu. YD	Acre FT	Litres	M. cubed
Cu. IN	X 1	0.004329	0.000579	2.14E-05	1.33E-08	0.01639	1.64E-05
Gallons	X 231	1	0.1337	0.004951	3.07E-06	3.785	0.003785
Cu. FT	X 1728	74805	1	0.037	0.000023	28.32	0.02832
Cu. YD	X 46656	202	27	1	0.00062	764.6	0.7646
Acre FT	X 75270000	325892	43.592	1613	1	1233000	1233
Litres	X 61.02	0.2642	0.03531	0.001308	8.11E-07	1	0.001
M cubed	X 61023	264.2	35.31	1.308	0.000811	1000	1

Pressure						
You Have:	To Obtain:					
Units	PSI	Feet H2O	Meters H2O	KG/CM Sq.	KPa	Bar
PSI	X 1	2.31	0.70317	0.0703	6.895	0.06896
Feet H2O	X 0.4335	1	0.3048	0.0305	2.984	0.02983
Meters H2O	X 1.422	3.281	1	0.1	9.804	0.09804
KG/CM Sq.	X 14.22	32.81	10	1	98.04	0.9804
KPa	X 0.145	0.3351	0.102	0.0102	1	1.01
Bar	X 14.5	33.52	10.2	1.02	100	1

Power			
You Have:	To Obtain:		
Units	HP	Watts	BTU
HP	X 1	745.7	42.43
Watts	X 0.00134	1	0.05689
BTU	X 0.02358	17.58	1

Length									
You Have:	To Obtain:								
Units	Inches	Feet	Yards	Miles	MM	CM	Meters	Kilometers	
Inches	X 1	0.0833	0.0278	1.58E-05	25.4	2.54	0.0254	2.54E-05	
Feet	X 12	1	0.3333	0.000189	304.8	30.48	0.3048	0.000305	
Yards	X 36	3	1	0.000568	914.4	91.44	0.9144	0.000914	
Miles	X 63360	5280	1760	1	1609344	160934.4	1609.3	1.6094	
MM	X 0.03937	0.00328	0.00109	6.21E-07	1	0.1	0.001	0.000001	
CM	X 0.3937	0.0328	0.0109	6.21E-06	10	1	0.01	0.00001	
Meters	X 39.37	3.281	1.0936	0.000621	100	100	1	0.001	
Kilometers	X 39370	3280.8	1093.6	0.6214	100000	100000	1000	1	

Area									
You Have:	To Obtain:								
Units	Sq. IN	Sq. FT	Sq. YD	Acres	Sq. MI	CM Sq.	M Sq.	Hectares	KM Sq.
Sq. IN	X 1	0.00694	0.00077	1.6E-07	2.5E-10	6.452	0.00065	6.5E-08	6.5E-10
Sq. FT	X 144	1	0.1111	2.3E-05	3.6E-08	929	0.0929	9.3E-06	9.3E-08
Sq. YD	X 1296	9	1	0.00021	3.2E-07	8360	0.8361	8.4E-05	8.4E-07
Acres	X 6272640	43560	4840	1	0.00156	4.05E+07	4047	0.4047	0.00405
Sq. MI	X 4E+09	2.8E+07	3099600	640	1	2.6E+10	2590000	259	2.59
CM Sq.	X 0.155	0.00108	0.00012	2.5E-08	3.9E-11	1	0.0001	1E-07	1E-10
M Sq.	X 1550	10.76	1.196	0.00025	3.9E-07	10000	1	0.0001	1E-06
Hectares	X 1.6E+07	107.639	11960	2.471	0.00386	1E+08	10000	1	0.01
KM Sq.	X 1.6E+09	1.1E+07	1196756	247.1	0.3861	1E+10	1000000	100	1

Flow						
You Have:	To Obtain:					
Units	US GPM	IMP GPM	Acre IN/HR	Litres/Sec	Litres/Min	M cubed/HR
US GPM	1	0.833	0.0022	0.0631	3.785	0.227
IMP GPM	1.2	1	0.0026	0.0757	4.546	0.272
Acre IN/HR	452.4	376.9	1	28.57	1715.27	102.77
Litres/Sec	15.85	13.2	0.035	1	60	3.6
Litres/Min	0.2642	0.22	0.000583	0.0167	1	0.06
M cubed/HR	4.4	3.69	0.00973	0.2778	16667	1

Flow in (GPM) required to cover one acre			
Irrigation time in hours	1/4"	1/2"	1"
6	18.86	37.70	75.40
7	16.15	32.30	64.60
8	14.14	28.28	56.55
9	12.56	25.12	50.24
10	11.31	22.62	45.24

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## Formulas

### 1. Temperature

$$F = 9/5 C + 32, C = 5/9 F - 32$$

### 2. Hazen and Williams

$$H_f = 0.002083 L \left( \frac{100}{c} \right)^{1.85} \times \frac{GPM}{d^{4.865}}$$

### 3. Velocity

$$\frac{0.4085 (GPM)}{d^2}$$

### 4. BHP=

$$\frac{PSI \times GPM}{1714 \times \text{EFF of pump}} = \frac{TDH \times GPM}{3960 \times \text{EFF of pump}}$$

### 5. Affinity

$$\frac{Q_1}{Q_2} = \frac{N_1}{N_2} \quad \frac{H_1}{H_2} = \left( \frac{N_1}{N_2} \right)^2 \quad \frac{BHP_1}{BHP_2} = \left( \frac{N_1}{N_2} \right)^3$$

### 6. KVA single phase

$$\frac{IE}{1000}$$

### KVA three phase

$$\frac{IE (1.73)}{1000}$$

### 7. Ohms Law

$$E = IR, I = E/R, R = E/I$$

### 8. Cylinder Volume

$$3.142 \times \text{radius}^2 (\text{ft}) \times \text{height} \times 7.48$$

**radius** = 1/2 diameter

**E** = voltage (volts)

**I** = amperage (amps)

**R** = resistance (ohms)

**Q** = capacity (GPM)

**H<sub>f</sub>** = total head (feet)

**BHP** = brake horsepower (HP)

**D** = inside diameter of pipe

**L** = length of pipe

**H** = head loss due to friction in feet of liquid

**N** = pump speed RPM

**TDH** = total dynamic head (ft)

**PSI** = pounds per square inch

**GPM** = gallons per minute (flow)

**C** = Hazen & Williams friction factor

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## Intake Line Sizes Of Smooth Bore Pipe

Length of Pipe	8"	10"	12"	14"	16"	18"	20"	22"	24"	26"	28"	30"	32"	34"	36"
25'	500	800	1150	1550	2000	2550	3150	3800	4500	5300	6100	7100	8000	9100	10200
50'	425	675	950	1300	1700	2150	2650	3200	3800	4500	5200	6000	6800	7600	8600
100'	375	575	800	1100	1450	1800	2250	2750	3250	3800	4400	5100	5800	6500	7300
150'	325	500	700	950	1250	1600	1950	2400	2800	3300	3800	4400	5000	5700	6300
200'	250	400	575	800	1000	1300	1600	1950	2200	2700	3100	3600	4100	4600	5200
250'	225	350	500	700	900	1150	1400	1700	2050	2400	2800	3200	3600	4100	4600
300'	225	350	500	650	900	1100	1350	1650	1950	2300	2700	3100	3500	4000	4400
350'	200	325	450	600	800	1050	1250	1550	1850	2200	2500	2900	3300	3700	4100
400'	175	275	400	550	700	900	1050	1300	1550	1800	2100	2400	2800	3100	3500
450'	175	250	350	500	650	850	1050	1250	1500	1700	2000	2300	2600	3000	3300
500'	150	250	350	500	650	800	1000	1200	1400	1600	2000	2200	2500	2800	3200

(2) Single phase control boxes may be connected at any point of the total cable length.

## THREE PHASE MOTOR MAXIMUM CABLE LENGTH (motor to service entrance) (3)

Motor Rating	Copper Wire Size (1)												
	Volts	HP	14	12	10	8	6	4	2	0	00	000	0000
200 V 60 Hz	.5	710	1140	1800	2840	4420							
	.75	510	810	1280	2030	3160							
	1	430	690	1080	1710	2670	4140						
	1.5	310	500	790	1260	1960	3050						
	2	240	390	610	970	1520	2360	3610	5420				
	3	180	290	470	740	1160	1810	2760	4130				
	5	110*	170	280	440	690	1080	1660	2490	3050	3670	4440	
	7.5	0	0	200	310	490	770	1180	1770	2170	2600	3150	
	10	0	0	0	230*	370	570	880	1330	1640	1970	2390	
	15	0	0	0	160*	250	390	600	910	1110	1340	1630	
20	0	0	0	0	190*	300*	460	700	860	1050	1270		
25	0	0	0	0	0	240*	370*	570	700	840	1030		
30	0	0	0	0	0	0	310*	470	580	700	850		
230 V 60 Hz	.5	930	1490	2350	3700	5760	8910						
	.75	670	1080	1700	2580	4190	6490	9860					
	1	560	910	1430	2260	3520	5460	8290					
	1.5	420	670	1060	1670	2610	4050	6160	9170				
	2	320	510	810	1280	2010	3130	4770	7170	8780			
	3	240	390	620	990	1540	2400	3660	5470	6690	8070	9690	
	5	140*	230	370	590	920	1430	2190	3290	4030	4850	5870	
	7.5	0	160*	260	420	650	1020	1560	2340	2970	3440	4160	
	10	0	0	190*	310	490	760	1170	1760	2160	2610	3160	
	15	0	0	0	210*	330	520	800	1200	1470	1780	2150	
20	0	0	0	0	250*	400	610	930	1140	1380	1680		
25	0	0	0	0	0	320*	500	750	920	1120	1360		
30	0	0	0	0	0	260*	410	620	760	930	1130		

3) The portion of the total cable which is between the service entrance and a three phase motor starter should not exceed 25% of the total maximum length to assure reliable starter operation.

Lengths marked \* meet the U.S. National Electrical Code ampacity only for individual conductor 75°C cable. Only the lengths without \* meet the code for jacketed 75°C cable. Local code requirements may vary.

For additional cable information, go to [www.franklin-electric.com](http://www.franklin-electric.com) or call Franklin Electric at 1-800-348-2420.

Motor Rating	Copper Wire Size (1)												
	Volts	HP	14	12	10	8	6	4	2	0	00	000	0000
460 V 60 Hz	.5	3770	6020	9460									
	.75	2730	4350	6850									
	1	2300	3670	5770	9070								
	1.5	1700	2710	4270	6730								
	2	1300	2020	3270	5150	8050							
	3	1000	1600	2520	3970	6200							
	5	590	950	1580	2360	3700	5750						
	7.5	420	680	1070	1690	2640	4100	6260					
	10	310	500	790	1250	1960	3050	4650	7050				
	15	0	340*	540	850	1340	2090	3200	4810	5900	7110		
20	0	0	410	650	1030	1610	2470	3730	4580	5530			
25	0	0	0	530*	830	1300	1990	3010	3700	4470	5430		
30	0	0	0	430*	680	1070	1640	2490	3080	3700	4500		
40	0	0	0	0	500*	790	1210	1830	2250	2710	3290		
50	0	0	0	0	0	640*	980	1480	1810	2190	2650		
60	0	0	0	0	0	540*	830*	1250	1540	1850	2240		
75	0	0	0	0	0	680*	1030	1560	1920	2350	2850		
100	0	0	0	0	0	0	760*	940	1130	1380			
125	0	0	0	0	0	0	0	740*	890	1000*			
150	0	0	0	0	0	0	0	0	760*	950*			
175	0	0	0	0	0	0	0	0	0	0	810*		
200	0	0	0	0	0	0	0	0	0	0	0	0	
575 V 60 Hz	.5	5900	9410										
	.75	4270	6810										
	1	3630	5800	9120									
	1.5	2620	4180	6580									
	2	2030	3250	5110	8060								
	3	1580	2530	3980	6270								
	5	920	1480	2330	3680	5750							
	7.5	680	1060	1680	2650	4150							
	10	490	780	1240	1950	3060	4770						
	15	330*	530	850	1340	2090	3260						
20	0	410*	650	1030	1610	2520	3960	5830					
25	0	0	520*	830	1300	2030	3110	4710					
30	0	0	430*	680	1070	1670	2560	3880	4770	5780	7030		
40	0	0	0	500*	790	1240	1900	2960	3510	4230	5140		
50	0	0	0	0	640*	1000	1540	2310	2840	3420	4140		
60	0	0	0	0	0	850*	1300	1960	2400	2890	3500		
75	0	0	0	0	0	690*	1060	1600	1970	2380	2890		
100	0	0	0	0	0	0	790*	1190*	1480	1770	2150		
125	0	0	0	0	0	0	0	950*	1160*	1400	1690		
150	0	0	0	0	0	0	0	800*	990*	1190*	1440		
175	0	0	0	0	0	0	0	870*	1050*	1270*			
200	0	0	0	0	0	0	0	0	920*	1110*			

Goolds Pumps