WATERTRONICS

VOLUME

[you have] units	multiply by: [to obtain] in³	gallons	ft³	yd³	acre-ft	liters	m³
in³	1	0.004329	0.000579	2.14E–05	1.33E–08	0.01639	1.64E–05
gallons	231	1	0.1337	0.004951	3.07E–06	3.785	0.003785
ft³	1728	74805	1	0.037	0.000023	28.32	0.02832
yd³	46656	202	27	1	0.00062	764.6	0.7646
acre-ft	75270000	325892	43592	1613	1	12330000	1233
litres	61.02	0.2642	0.03531	0.001308	8.11E–07	1	0.001
m³	61023	264.2	35.31	1.308	0.0000811	1000	1

PRESSURE

[you have] units	multiply by: [to obtain] PSI	feet H_2O	meters H_2O	kg/cm²	kPa	bar
PSI	1	2.31	0.730317	0.0703	6.895	0.06896
feet H_2O	0.4335	1	0.3048	0.0305	2.984	0.02983
meters H_2O	1.422	3.281	1	0.1	9.804	0.09804
kg/cm²	14.22	32.81	10	1	98.04	0.9804
kPa	0.145	0.3351	0.102	0.0102	1	0.01
bar	14.5	33.52	10.2	1.02	100	1

FLOW

[you have] units	multiply by: [to obtain] US GPM	IPM GPM	acre in/hr	liters/sec	liters/min	m³/hr
US GPM	1	0.833	0.0022	0.0631	3.785	0.227
IPM 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
liters/sec	15.85	13.2	0.035	1	60	3.6
liters/min	0.2642	0.22	0.000583	0.0167	1	0.06
m³/hr	4.4	3.69	0.00973	0.2778	16667	1

VARIABLE DEFINITIONS

RADIUS	½ Diameter
d	Inside Diameter of Pipe
TDH	Total Dynamic Head (Feet)
GPM	Gallons Per Minute
BHP	Brake Horsepower
PSI	Pounds Per Square Inch
H_f	Head Loss Due to Friction (Feet of Liquid)
H	Total Head (Feet)
Q	Capacity (GPM)
N	Pump Speed
E	Voltage (Volts)
I	Amperage (Amps)
R	Resistance (Ohms)
C	Hazen & Williams Friction Factor

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

AREA

[you have] units	multiply by: [to obtain] in²	ft²	yd³	acres	mi²	cm²	m²	hectares	km²
in²	1	0.00694	0.00077	1.6E–07	2.5E–10	6.452	0.00065	6.5E–08	6.5E–10
ft²	144	1	0.1111	2.5E–05	3.6E–08	929	0.0929	9.3E–06	9.3E–08
yd²	1296	9	1	0.00021	3.2E–07	8360	0.8361	8.4E–05	8.4E–07
acres	6272640	43560	4840	1	0.00156	4.05E + 07	4047	0.4047	0.00405
mi²	4E + 09	2.8E + 07	3099600	640	1	2.6E + 10	2590000	259	2.59
cm²	0.155	0.00108	0.00012	2.5E–08	3.9E–11	1	0.0001	1E–07	1E–10
m²	w1550	10.76	1.196	0.00025	3.9E–07	10000	1	0.0001	1E–06
hectares	1.6E + 07	107.639	11960	2.471	0.00386	1E + 08	10000	1	0.01
km²	1.6E + 09	1.1E + 07	1196756	247.1	0.3861	1E + 10	1000000	100	1

LENGTH

[you have] units	multiply by: [to obtain] inches	feet	yards	miles	mm	cm	meters	kilometers
inches	1	0.0833	0.0278	1.58E–05	25.4	2.54	0.0254	2.54E–05
feet	12	1	0.3333	0.000189	304.8	30.48	0.3048	0.000305
yards	36	3	1	0.000568	914.4	91.44	0.9144	0.000914
miles	63360	5280	1760	1	1609344	160934.4	1609.3	1.6094
mm	0.03937	0.00328	0.00109	6.21E–07	1	0.1	0.001	0.000001
cm	0.3937	0.0328	0.0109	6.21E–06	10	1	0.01	0.0001
meters	39.37	3.281	1.0936	0.000621	1000	100	1	0.001
kilometers	39370	3280.8	1093.6	0.6214	1000000	100000	1000	1

FORMULAS

TEMPERATURE	$F = (1.8 \times C) + 32$	$C = \frac{(F - 32)}{1.8}$	CYLINDER VOLUME	3.142 × radius² (ft) × height × 7.48	AFFINITY	$\frac{Q1}{Q2} = \frac{N1}{N2}$ $\frac{H1}{H2} = \left(\frac{N1}{N2}\right)^2$ $\frac{BHP1}{BHP2} = \left(\frac{N1}{N2}\right)^3$
VELOCITY	$\frac{0.4085\ (GPM)}{d^2}$		KVA SINGLE PHASE	$\frac{IE}{1000}$	HAZEN AND WILLIAMS	$H_f = 0.002083\ L \left(\frac{100}{c}\right)^{1.85} \times \frac{GPM}{d^{4.865}}$
BHP	$\frac{PSI \times GPM}{1714 \times EFF\ of\ pump}$		KVA THREE PHASE	$\frac{IE(1.73)}{1000}$	OHMS LAW	$E = IR$ $R = \frac{E}{I}$ $I = \frac{E}{R}$

WATERTRONICS®

SUBMERSIBLE MOTORS
(3600 RPM, 460 Volt, 3 Phase)

HP	FLA 460 Volt	Locked Starting Amps	Full Load Efficiency	Full Power Factor	NEMA Code Design
4-inch Motors					
1	2	13.5	70	M	B
1.5	2.5	16.6	76	K	B
2	3.5	23.3	69	L	B
3	4.9	31.0	75	K	B
5	8	53.2	74	K	B
7.5	11.8	81.9	76	K	B
10	17.0	116.0	75	L	A
6-inch Motors					
15	20.8	133	81	H	B
20	26.9	181	82	J	B
25	33.5	240	83	J	B
30	39.5	284	83	J	B
40	53.5	397	83	J	B
50	67.7	414	83	H	B
60	80.5	518	84	H	B

VERTICAL HOLLOW SHAFT WP1 ELECTRICAL MOTORS
(1800 RPM, 460 Volt, 3 Phase 60 Hertz)

HP	FLA 460 Volt	Locked Starting Amps	Full Load Efficiency	Full Power Factor	NEMA Code Design
15	18	115	93	84	B
20	23.7	139	93	84.8	B
25	30	181	93.6	85.5	B
30	36	228	94.1	84.9	A
40	45	286	94.1	87.8	B
50	57	357	94.1	87.7	B
60	68	424	95	87.2	B
75	87	539	94.5	85.4	B
100	114	737.5	95	86.3	B
125	142	925.1	95	86.8	B
150	164	1085	95.8	89.3	B
200	222	1450	95.8	88.2	B
250	283	1781.9	95.4	86.7	B
300	338	2200	95.8	86.6	B

HORIZONTAL ODP MOTORS (3600 RPM, 3 Phase)

HP	Frame	FLA 208 Volt	FLA 230 Volt	FLA 460 Volt	Locked Starting Amps	Full Load Efficiency	Full Power Factor	NEMA Code Design
2	145JM	5.6	5	2.5	21.5	85.5	87	B
3	145JM	8	7.6	3.8	72.1	85.5	87	B
5	182JM	12.8	12	6	49.63	86.5	91	A
7.5	184JM	18	17.2	8.6	86.3	88.5	89	A
10	213JM	25.6	24	12	79	89.5	86	B
15	215JM	36	35	17.5	109.3	90.2	89	B
20	254JM	51	47	23.5	153	91	88	B
25	256JM	62	56	28	197	91.7	89	B
30	284JM	76	70	35	240	91.7	87	A
40	286JM	100	92	46	282	92.4	89	B
50	324JM	124	112	56	376	93	90	A
60	326JM	—	136	68	443	93.6	89	A
75	364TCZ	178	164	82	556	93.6	91	B

FRICTION LOSS IN PIPE FITTING IN TERMS OF EQUIVALENT LENGTH OF FEET IN 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"	1.38	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"	2.68	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"	6.68	25.10	13.40	16.70	50.10	29.20
12"	7.96	29.80	15.90	19.90	59.70	34.80
14"	8.75	32.80	17.50	21.80	65.60	38.30

POWER

units			*[to obtain]*		
			HP	Watts	BTU
[you have]	HP	*multiply by:*	1	745.7	42.43
	Watts		0.00134	1	0.05689
	BTU		0.02358	17.58	1

ELEVATION DERATING

Altitude (ft)	Derating Factor
3300 – 5000	0.97
5001 – 6600	0.94
6601 – 8300	0.91
8301 – 9900	0.88
9901 – 11500	0.85

ELECTRIC WIRE SIZE

Disc Size	Max Disc Amperage	Max HP 460Vac	100 ft Wire Size	100 ft Conduit	200 ft Wire Size	200 ft Conduit	300 ft Wire Size	300 ft Conduit	500 ft Wire Size	500 ft Conduit	1000 ft Wire Size	1000 ft Conduit
30	26	15	10 AWG	1/2"	10 AWG	1/2"	10 AWG	1/2"	10 AWG	1/2"	6 AWG	3/4"
60	52	40	6 AWG	3/4"	6 AWG	3/4"	6 AWG	3/4"	6 AWG	3/4"	3 AWG	1-1/4"
100	87	60	3 AWG	1-1/4"	3 AWG	1-1/4"	#3	1-1/4"	3 AWG	1-1/4"	1 AWG	1-1/4"
200	174	125	3/0 AWG	2"	3/0 AWG	2"	3/0 AWG	2"	3/0 AWG	2"	4/0 AWG	2"
400	348	250	750 MCM	4"	750 MCM	4"	750 MCM	4"	750 MCM	4"	250×2	3"
600	522	450	600×2	4"	600×2	4"	600×2	4"	600×2	4"	700×2	4"
800	696	500	700×2	5"	700×2	5"	700×2	5"	700×2	5"	750×2	5"

Wires sized per NEC Table 310-16(75 deg. C). Conduit sized per NEC Table C7 (Liquidtight Flexible Metal Conduit).

STANDARD TURBINE PUMP SELECTIONS (60HZ/1800 RPM)

460v Premium Efficient VHS motors
Pump TDH is Based on 10' Lift and 15' Station Losses

CONSULT FACTORY FOR APPLICATIONS AT ELEVATIONS ABOVE 3300 FEET, WITH DEEP WETWELLS, OR WITH OTHER LOSSES SUCH AS FILTERING.

Full Load Amp (FLA)	15 HP	20 HP	25 HP	30 HP	40 HP	50 HP	60 HP	75 HP	100 HP	125 HP
	18 FLA	23.7 FLA	30 FLA	36 FLA	45 FLA	57 FLA	68 FLA	87 FLA	114 FLA	142 FLA

Flow per Pump (GPM)	Station Discharge Pressure											
	80 PSI	85 PSI	90 PSI	95 PSI	100 PSI	105 PSI	110 PSI	115 PSI	120 PSI	125 PSI	130 PSI	135 PSI
150	15 HP	15 HP	15 HP	15 HP	15 HP	15 HP	20 HP	20 HP	20 HP	20 HP	20 HP	20 HP
175	15 HP	15 HP	15 HP	15 HP	20 HP	20 HP	20 HP	20 HP	20 HP	20 HP	20 HP	25 HP
200	15 HP	15 HP	20 HP	20 HP	20 HP	20 HP	20 HP	25 HP	25 HP	25 HP	25 HP	25 HP
225	15 HP	20 HP	20 HP	20 HP	20 HP	20 HP	25 HP	25 HP	25 HP	25 HP	25 HP	25 HP
250	20 HP	20 HP	20 HP	20 HP	20 HP	25 HP	25 HP	30 HP	30 HP	30 HP	30 HP	30 HP
275	20 HP	20 HP	20 HP	25 HP	25 HP	25 HP	30 HP	30 HP	30 HP	30 HP	40 HP	40 HP
300	20 HP	25 HP	25 HP	25 HP	30 HP	30 HP	30 HP	30 HP	30 HP	40 HP	40 HP	40 HP
325	25 HP	25 HP	25 HP	30 HP	30 HP	30 HP	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP
350	25 HP	25 HP	30 HP	30 HP	30 HP	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP
375	25 HP	30 HP	30 HP	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP
400	30 HP	30 HP	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP
425	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP
450	30 HP	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP
475	40 HP	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP	50 HP
500	40 HP	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP	50 HP	60 HP
525	40 HP	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP
550	40 HP	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP
575	40 HP	40 HP	50 HP	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP	60 HP
600	40 HP	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP	60 HP	60 HP	75 HP
625	50 HP	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP
650	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP
675	50 HP	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP
700	50 HP	50 HP	50 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP
725	50 HP	50 HP	60 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP
750	50 HP	50 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP
775	50 HP	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP
800	50 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP
825	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP
850	60 HP	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP
875	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP
900	60 HP	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP
925	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP
950	60 HP	75 HP	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP
975	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP
1000	75 HP	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	125 HP
1025	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	125 HP	125 HP
1050	75 HP	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	125 HP	125 HP
1075	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	125 HP	125 HP	125 HP
1100	75 HP	75 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	100 HP	125 HP	125 HP	125 HP

WATERTRONICS®

INTAKE LAKE SCREEN SIZES

Model Number	GPM Rating	Screen (in^2)	Velocity @ Rated (ft/sec)	Max Inlet Pipe Size	Length	Width	Height
SBS-18	950	972	0.32	16"	18"	18"	30"
SBS-24	1500	1728	0.28	22"	24"	24"	36"
SBS-36	3200	3888	0.26	34"	36"	36"	48"
SBS-48	6000	6912	0.28	46"	48"	48"	60"
SBS-60	7100	10800	0.21	58"	60"	60"	66"
SBS-72	8400	15552	0.17	70"	72"	72"	78"

MESH SIZE

Mesh	Micron	Inches
4	4760	0.185
6	3360	0.131
8	2380	0.093
12	1680	0.065
16	1190	0.046
20	840	0.0328
30	590	0.0232
40	420	0.0164
50	297	0.0116
60	250	0.0097
70	210	0.0082
80	177	0.0069
100	149	0.0058
140	105	0.0041
200	74	0.0029
230	62	0.0023
270	53	0.0021
325	44	0.0017
400	37	0.0015
625	20	0.0008
1250	10	0.0004
2500	5	0.0002

AUTOFLUSH WYE STRAINER FLOW RATE
(with 1/8" Screen Perforation)

Wye Strainer	Flow Rate (GPM)
2"	Up to 75
2.5"	Up to 125
3"	Up to 200
4"	Up to 350
6"	Up to 800
8"	Up to 1300
10"	Up to 2000
12"	Up to 3000
14"	Up to 4500

SELF-CLEANING INLET SCREEN FLOW RATING

Flow Rate (GPM)	Flush Rate (GPM)
1000	18
1350	25
1700	36
2050	41
2400	50

VAF FILTERS (300 micron)

Filter	Flange	Max GPM	Flush Line
V500	4"	400	1-1/2"
	6"	650	1-1/2"
V1000	6"	850	2"
	8"	1200	2"
V1500	8"	1600	2"
	10"	1750	2"
V2000	10"	2400	2"

FORSTA FILTERS (300 micron)

Filter	Flange	Max GPM	Flush Line
A4-180C	4"	400	1-1/2"
A6-180C	6"	811	1-1/2"
D6-180	6"	900	2"
D8-180	8"	1569	2"
D8-180	8"	1600	2"
D10-180	10"	2353	2"
E10-180	10"	2500	2"

INTAKE LINE SIZES OF SMOOTH BORE PIPE (flume, 1.5 fps)

Length of Pipe	Flow Rate (GPM) by Size of Smooth Bore Steel, Concrete or PVC														
	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	100	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

PRESSURE DROP (PSI)
(Through Flanged "Y" Strainer on 1/8" Perforations)

GPM	4"	6"	8"	10"	12"	14"
300	1.07	0.20				
400	1.90	0.35				
500		0.55	0.21			
600		0.79	0.30			
700		1.08	0.40	0.16		
800		1.40	0.53	0.21		
900		1.78	0.67	0.26	0.17	
1000		2.19	0.83	0.33	0.21	
1200			1.19	0.47	0.30	
1400			1.62	0.64	0.40	0.14
1600			2.12	0.84	0.53	0.19
1800				1.06	0.67	0.24
2200				1.58	1.00	0.35
2400				1.88	1.19	0.42
2600				2.21	1.40	0.49
2800					1.62	0.57
3200					2.12	0.75
3400						0.84
3600						0.95
3800						1.05
4000						1.17
4200						1.29

PRESSURE DROP (PSI)
(Through a Cla-Val Model 100-01 Pressure Reducing Valve)

GPM	2"		
		3"	
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 Wafter Style Check Valve)

GPM	2"		
		2-1/2"	
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

VELOCITY AND PRESSURE DROP
For Sch. 40 Steel Pipe Losses per 100'
(Velocity in ft/sec (left) & Pressure Drop in PSI (right))

GPM	1"											
2	0.57	0.06	1-1/4"									
3	0.86	0.14	0.54	0.04	1-1/2"							
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	2"					
8	2.29	0.84	1.45	0.28	1.10	0.14	0.71	0.05	2-1/2"			
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	3"	
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			5.45	3.20	4.15	1.62	2.65	0.54	1.81	0.22	1.26	0.09
35	4"		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	0.18
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					6.77	3.32	4.82	1.32	3.38	0.53
90	2.22	0.19	6"				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					7.50	3.00	5.27	1.21
150	3.70	0.49	1.71	0.07	8"				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					8.42	2.90
225	5.54	1.04	2.56	0.16	1.15	0.04	10"				9.48	3.58
250	6.16	1.27	2.84	0.19	1.68	0.05	1.08	0.02	12"		10.60	4.36
275	6.78	1.51	3.13	0.23	1.84	0.06	1.19	0.02	1.19	0.02	11.60	5.21
300	7.39	1.77	3.41	0.27	2.01	0.07	1.29	0.02	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		
550	13.55	5.46	6.26	0.83	3.69	0.23	2.37	0.08	1.69	0.03	14"	
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	0.28	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	0.90	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	3.09	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	0.86	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	1.32	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
3200							13.81	2.06	9.82	0.90	7.05	0.40
3400							14.68	2.30	10.43	1.00	7.49	0.44
3600							15.54	2.56	11.04	1.11	7.94	0.49
3800							16.40	2.83	11.60	1.23	8.38	0.54
4000									12.27	1.35	8.82	0.60

RAIN WATER HARVESTING

GALLONS COLLECTED FROM A SURFACE BASED UPON RAINFALL VOLUME
620 gallons per 1,000 ft^2 of roof per 1" of rain 620 × roof area (kft^2) = y gallons
FLOW FROM A SURFACE AREA BASED UPON RAINFALL INTENSITY **Rainfall intensity must be in ft/hr**
rainfall intensity (ft/hr) × roof area (ft^2) = flow rate (ft^3/hr) flow rate (ft^3/hr) × .1247 = flow rate in GPM

WATERMAX SERIES PUMP CURVES