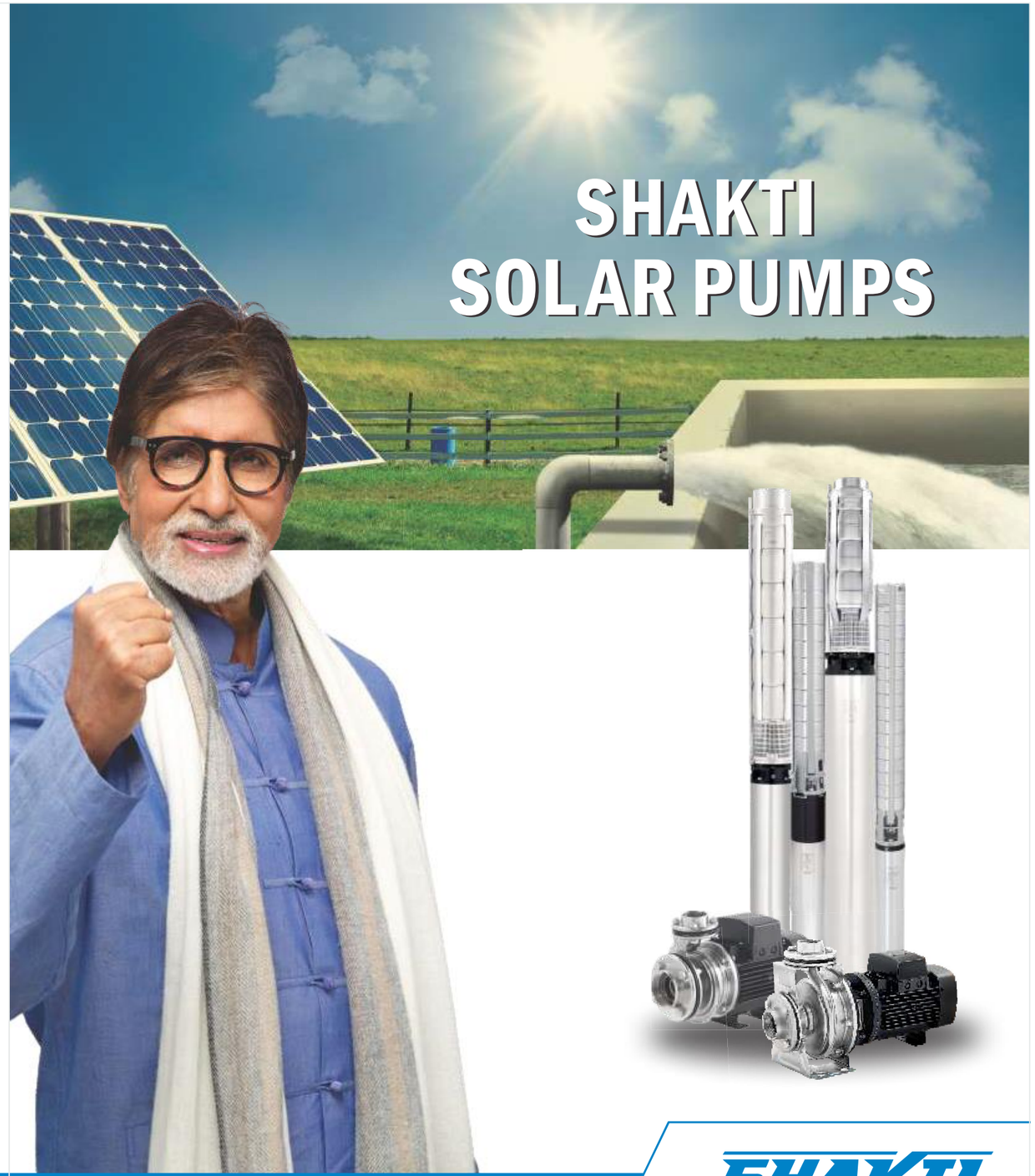

SAP No. 2900000726

June/2014-15/L1/500

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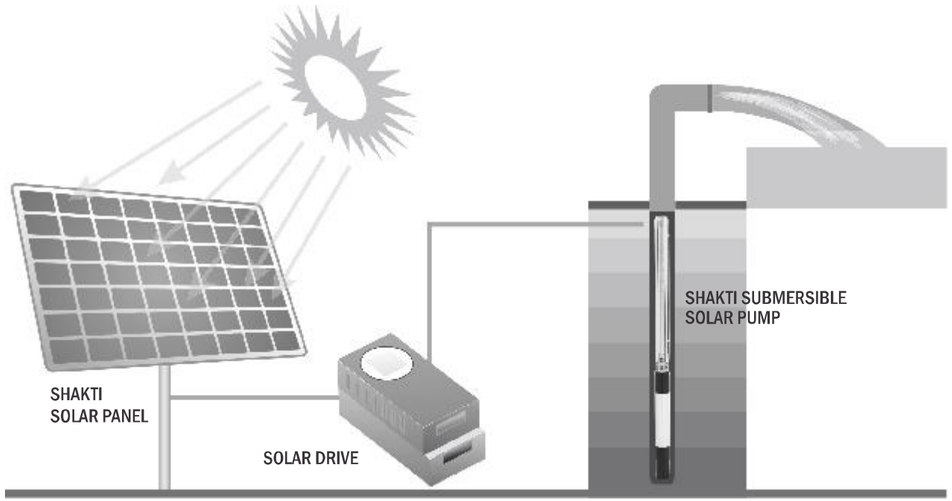
CONTENT

INTRODUCTION OF SOLAR PUMPING SYSTEM

Solar pumping system becomes more and more popular, it can be applied to daily use (underground water), agriculture irrigation, forestry irrigation, desert control, pasture animal husbandry, water supply for islands, wastewater treatment engineering, and so on. In recent years, with the promotion of the utilization of new energy resources, solar pumping systems are more and more used in municipal engineering, city centre squares, parks, tourist sites, resorts and hotels, the landscapes and fountain systems in the residential areas. This system is composed of a solar array, a pump and a solar pumping inverter. Based on the design philosophy that it is better to store water than electricity, there is no energy storing device such as store battery in the system.



Structure of solar pumping system

The solar array, an aggregation of many solar modules connected in series and parallel, absorbs sunlight radiation and converts it into electrical energy, providing dynamical water for the whole system. The pumping inverter controls and adjusts the system operation and converts the DC produced by solar array into AC to drive the pump, and adjust the output frequency in real-time according to the variation of sunlight intensity to realize the maximum power point tracking (MPPT). The pump, drive by 3-phase AC motor, can draw water from the deep wells or rivers and lakes to pour into the storage tank or reservoir, or directly connect to the irrigation system, fountain system, ect. According to the actual system demand and installation conditions, different types of pump such as centrifugal pump, axial flow pump, mixed-flow pump or deep-well pump can be used.

Applications

- Ground water lowering
- Irrigation systems
- Industrial Application
- Drip irrigation & sprinkler
- Tank / Cistern filling
- Wildlife refuge
- Rural water supply for ranches, cabins, and cottages
- Fountains

Features

- High flow system for faster tank fill and significant water output.
- Proven motor and pump technology for long-term reliability
- Available Free of cost at your doorstep.
- Clean and pollution free energy, Eco-friendly & do not harm nature.
- Ideal for remote areas, where electricity is not available or availability is capital intensive.
- Suitable for day time irrigation, Continuous supply for 6-8 hours in a day.
- MPPT – Max Power Point Tracking for maximizing efficiency of input power
- Soft start feature prevents water hammer and increases system life Easy to operate.
- Simple installation and no required maintenance.
- MNRE approved.

All-in-One Package

The Solar drive PAK is the System Solution for solar pumping requirements. Using Shakti Electric's quality components, our technical expertise in groundwater pumping, and innovative thinking based on global market inputs, we have developed a rugged, high-output system which tackles the challenges of remote and harsh environments. No other system delivers the features, benefits, and reliability of Solar drive PAK in just one package!

The Solar water pumping system includes

- Shakti Electric Submersible motor
- Shakti Submersible pump
- Solar Panel and its mounting structure
- Solar Drive controller
- Cable
- Pipes
- Variety of flow rates available in: 0 to 5000 lpm. (0 to 1320 US GPM)
- Motor and drive ratings available in: 1.0 to 30.0 HP (0.75 to 22.0 kW)

SOLAR CONTROLLER

OVERVIEW

The Shakti Solar controller is a variable speed motor drive designed to run a Shakti three-phase AC motor. The Shakti Solar provides water to remote locations by converting high voltage, direct current from a solar array into alternating current to run a shakti AC motor. When solar power is not available, the controller can manual switch to an alternate three or single-phase AC input such as a grid or generator or inverter from battery, if available. The controller provides fault detection, motor soft start, and speed control.

The Shakti Solar drive is designed with the high standard of reliability expected of Shakti pumps products. The controller attempts to drive the pump and motor to deliver water even under adverse conditions, reducing output as necessary to protect the system components from damage, and only shutting down in extreme cases.

Descriptions and Features

The Shakti Solar drives controller continuously monitors system performance and incorporates a number of features for pump system protection. In the event of a fault, the Shakti Solar drives will indicate the type of fault through the LCD displays.

The Shakti Solar drives system is optimized for pumping under adverse input power conditions unique to solar arrays.

- Internal diagnostics will tolerate a lower input voltage.
- Whenever possible, the controller attempts to regulate the pump load in a manner that optimizes for maximum power transfer from the solar array.
- The drive manually switches to AC backup power (when available) if the DC primary source is unable to support pump operation.

The controller construction is ruggedized for hostile environmental conditions.

- The case is constructed of heavy-gauge zinc plated steel to resist rain, animal intrusion and prolonged direct exposure to sunlight.
- The seals are designed for NEMA 3 (IEC rating IP55), (dust tight, and withstand directed jets of water).
- For maximum protection against dust, there is no external cooling fan or other external moving parts.

An easy to use interface is provided to enhance configurability and enable remote system monitoring.

- A three-digit seven-segment display provides a detailed indication of system status.
- A small keypad offers flexibility for selection of user options.
- A continuous data connection for remote telemetry is made available via an RS-485 port. (Optional)
- If using remote telemetry, follow the register information found in the RS-485 addendum. (Optional)

PROTECTION FEATURES

Electronic monitoring gives the controller the capability to monitor the system and automatically shut down in the event of:
Dry run conditions – with smart pump monitoring, High Voltage Surge, Low Input Voltage, Open motor circuit, Short circuit, Over heat, Earth fault

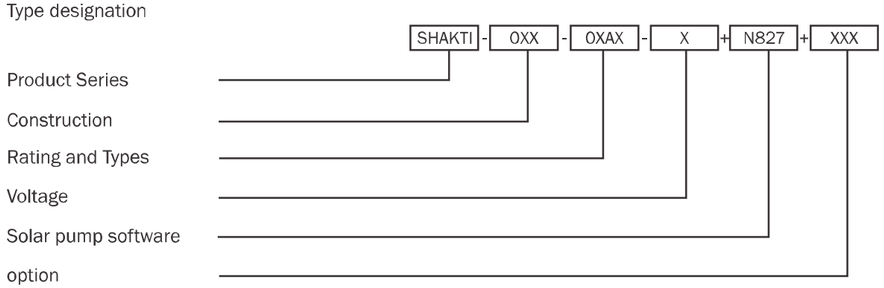
SELECTING AND ORDERING

Features

- Maximize your pump delivery without wasting a watt
- Automatic start and stop with Solar irradiation
- Self diagnostic and protection
- Dry run protection
- Dual supply mode - Solar and Grid compatible

- Compatible with all pumps

Type designation



TYPE CODE

This is the unique reference number as shown above that clearly identifies your drive by power rating as shown below

Voltages

Shakti is available in two voltage ranges:

2 = 125V to 400V DC or 200V to 240V AC
4 = 225V to 800V DC or 380V to 480V AC
Insert either “2” or “4”, depending upon your chosen voltage, into Features the type code shown.

Construction

“01E” within the type code (shown above) varies depending upon on the drive phase and EMC filtering. Choose below the one you need

01 = 1 phase
03 = 3 phase
E = EMC filter connected, 50Hz

RATING OF IP20

P_N (HP)	P_N (KW)	I_{2N} (A)	Type Description	Frame Size
125V to 400V DC or 200V to 240V 1-Phase AC				
0.5	0.37	4.7	SHAKTI-01E-04A7-2	R1
1.0	0.75	6.7	SHAKTI-01E-06A7-2	R1
1.5	1.1	7.5	SHAKTI-01E-07A5-2	R2
2.0	1.5	9.8	SHAKTI-01E-09A8-2	R2
225V to 800V DC or 380V to 480V 3-Phase AC				
3.0	2.2	7.3	SHAKTI-03E-07A3-4	R1
4.0	3.0	8.8	SHAKTI-03E-08A8-4	R1
5.0	4.0	12.5	SHAKTI-03E-12A5-4	R3
7.5	5.5	15.6	SHAKTI-03E-15A6-4	R3
10.0	7.5	23.1	SHAKTI-03E-23A1-4	R3
15.0	11.0	31.0	SHAKTI-03E-31A0-4	R4
20.0	15.0	38.0	SHAKTI-03E-38A0-4	R4
25.0	18.5	44.0	SHAKTI-03E-44A0-4	R4

SUBMERSIBLE PUMP

QF SERIES

PUMP PERFORMANCE QF2-9, 0.5 HP

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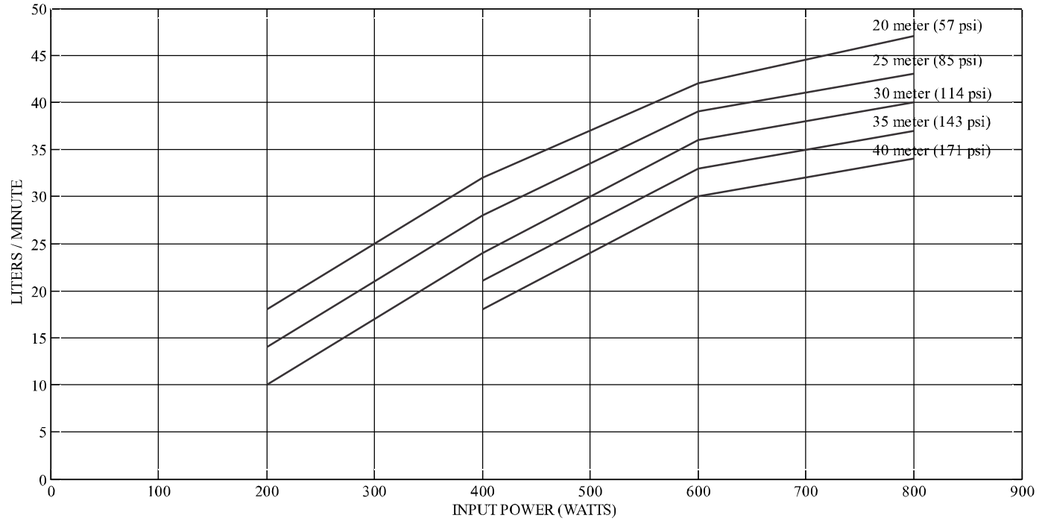
MOTOR 0.5 HP

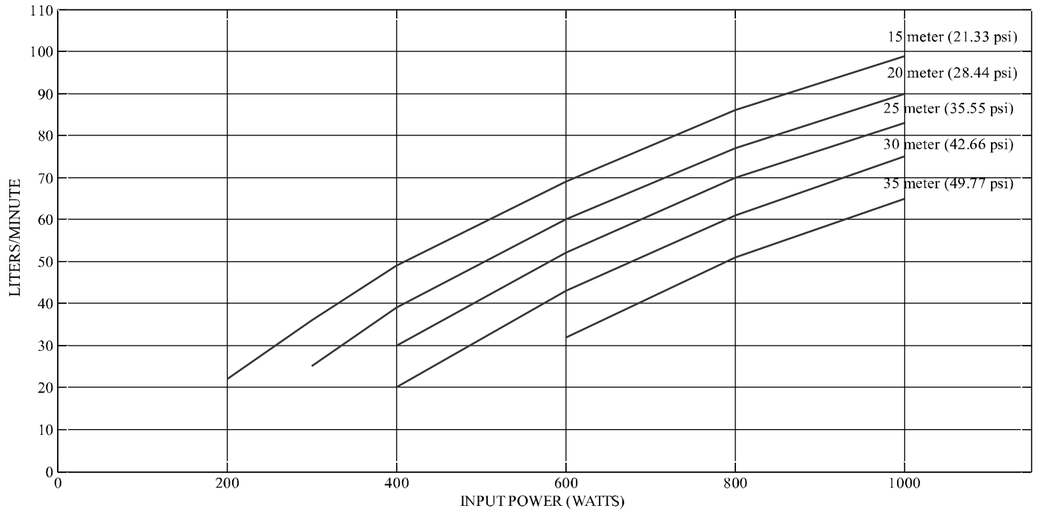


PHOTOVOLTAIC POWER (WATTS)

	800	600	400	200
HEAD (M)	FLOW RATE (LITERS / MINUTE)			
20	47	42	35	18
25	43	39	31	14
30	41	36	28	10
35	37	33	24	
40	34	30	21	

PUMP PERFORMANCE QF5-6, 0.5 HP

MOTOR 0.5 HP

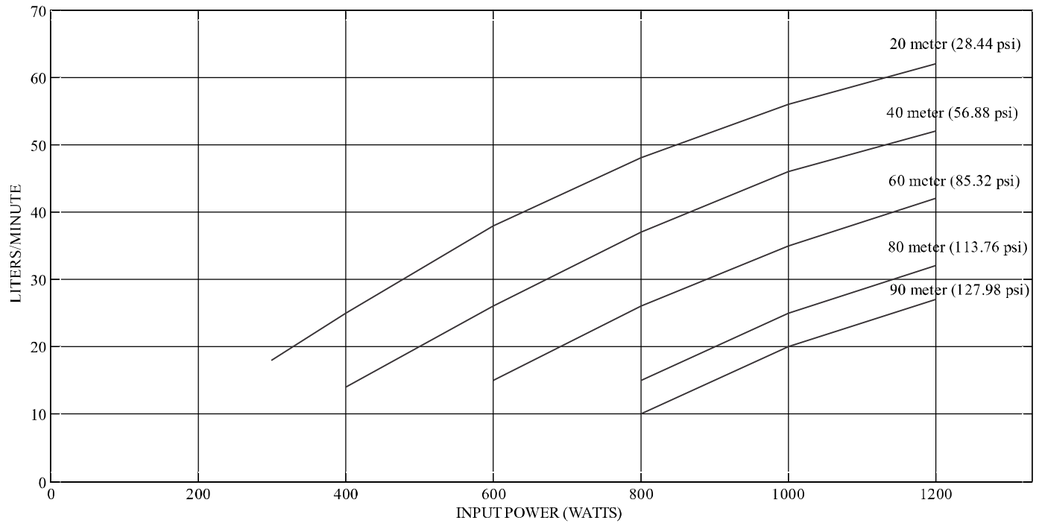


PHOTOVOLTAIC POWER (WATTS)

	1000	800	600	400	300	200
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**					
15	99	86	69	49	36	22
20	90	77	60	39	25	
25	83	70	52	30		
30	75	61	43	20		
35	65	51	32			

PUMP PERFORMANCE QF2-19, 1 HP

MOTOR 1 HP

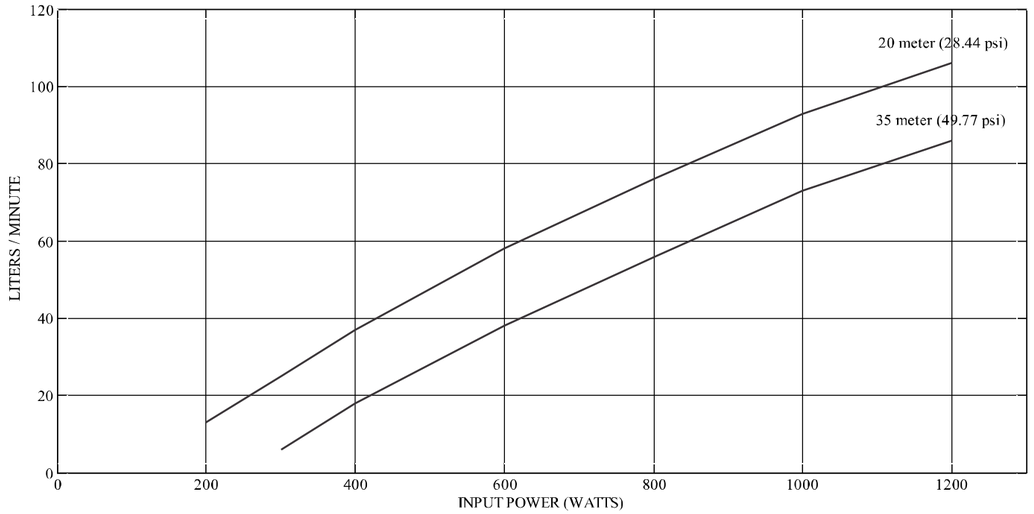


PHOTOVOLTAIC POWER (WATTS)

	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**					
20	62	56	48	38	25	18
40	52	46	37	26	14	
60	42	35	26	15		
80	32	25	15			
90	27	20	10			

PUMP PERFORMANCE QF6-10, 1 HP

MOTOR 1 HP

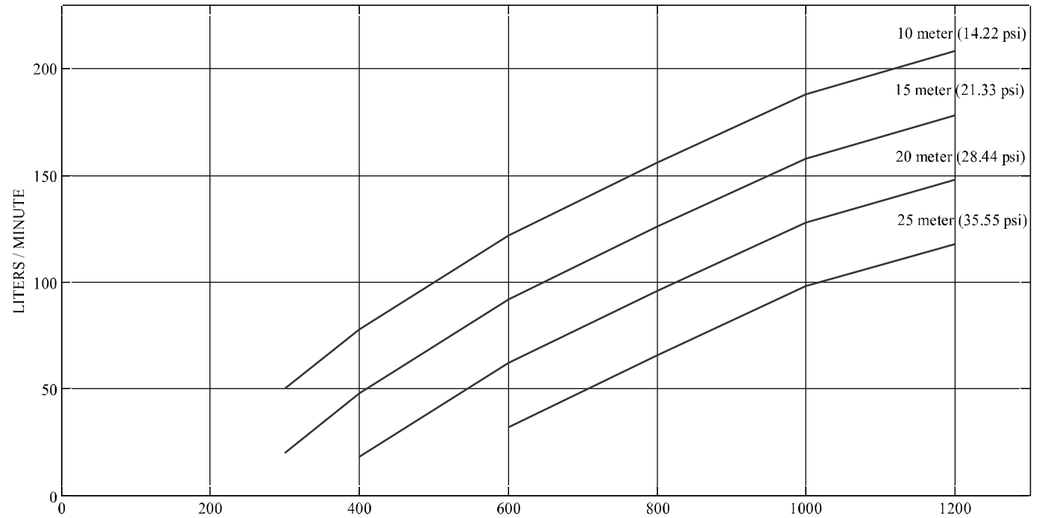


PHOTOVOLTAIC POWER (WATTS)

	1200	1000	800	600	400	300	200
HEAD (M)	FLOW RATE (LITERS / MINUTE)						
20	106	93	76	58	37	25	13
35	86	73	56	38	18	6	

PUMP PERFORMANCE QF12-5, 1 HP

MOTOR 1 HP

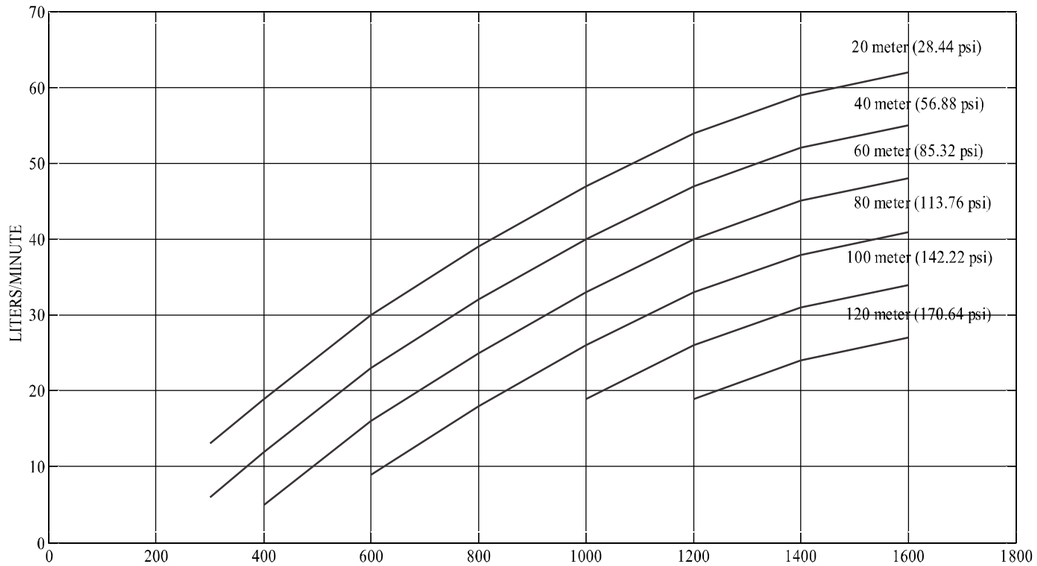


PHOTOVOLTAIC POWER (WATTS)

	1200	1000	800	600	400	300
HEAD (M)	FLOW RATE (LITERS / MINUTE)					
10	208	188	156	122	78	50
15	178	158	126	92	48	20
20	148	128	96	62	18	
25	118	98	66	32		

PUMP PERFORMANCE QF2-23, 1.5 HP

MOTOR 1.5 HP

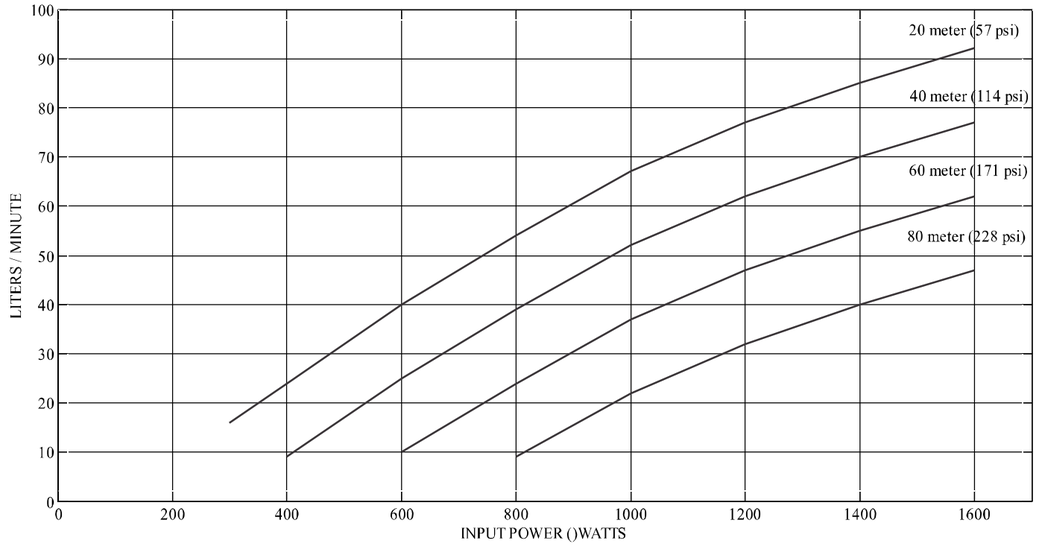


PHOTOVOLTAIC POWER (WATTS)

	1600	1400	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
20	62	59	54	47	39	30	19	13
40	55	52	47	40	32	23	12	6
60	48	45	40	33	25	16	5	
80	41	38	33	26	18	9		
100	34	31	26	19				
120	27	24	19					

PUMP PERFORMANCE QF5-18, 1.5 HP

MOTOR 1.5 HP

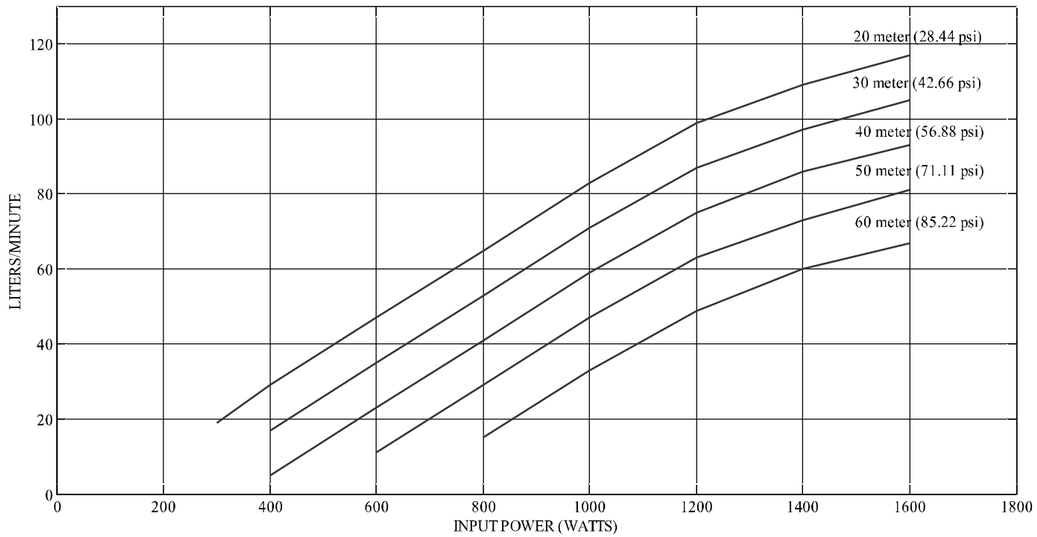


PHOTOVOLTAIC POWER (WATTS)

	1600	1400	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
20	92	85	77	67	54	40	24	16
40	77	70	62	52	39	25	9	
60	62	55	47	37	24	10		
80	47	40	32	22	9			

PUMP PERFORMANCE QF6-12, 1.5 HP

MOTOR 1.5 HP

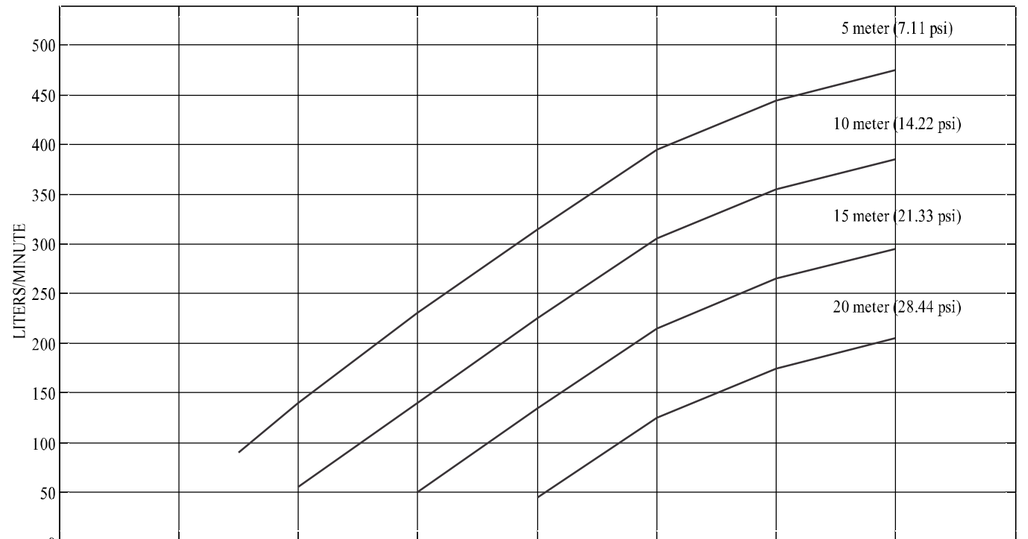


PHOTOVOLTAIC POWER (WATTS)

	1600	1400	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
20	117	109	99	83	65	47	29	19
30	105	97	87	71	53	35	17	
40	93	86	75	59	41	23	5	
50	81	73	63	47	29	11		
60	67	60	49	33	13			

PUMP PERFORMANCE QF10-2, 1.5 HP

MOTOR 1.5 HP

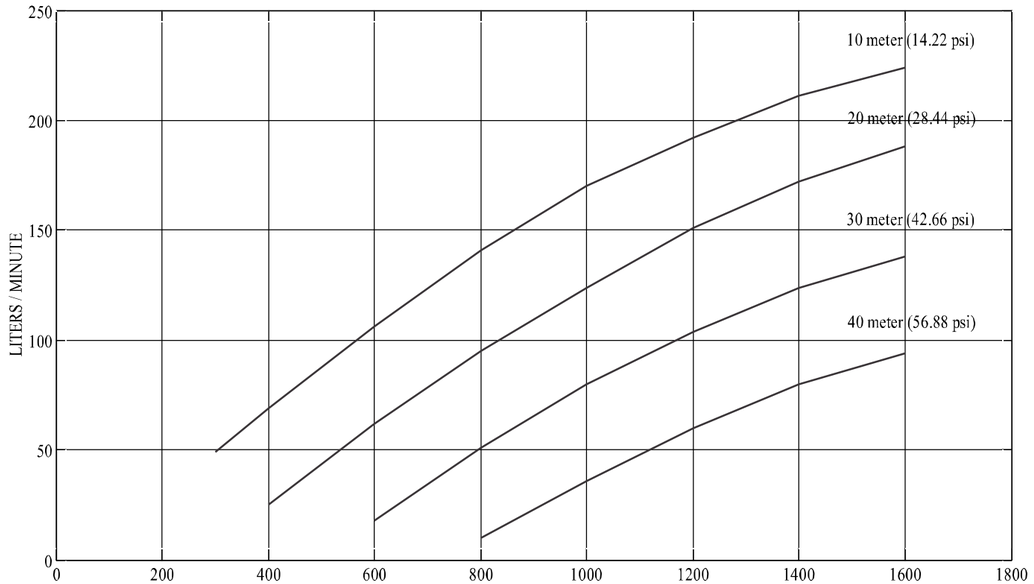


PHOTOVOLTAIC POWER (WATTS)

	1400	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**						
5	475	445	395	315	230	140	90
10	385	355	305	225	140	55	
15	295	265	215	135	50		
20	205	175	125	45			

PUMP PERFORMANCE QF12-7, 1.5 HP

MOTOR 1.5 HP

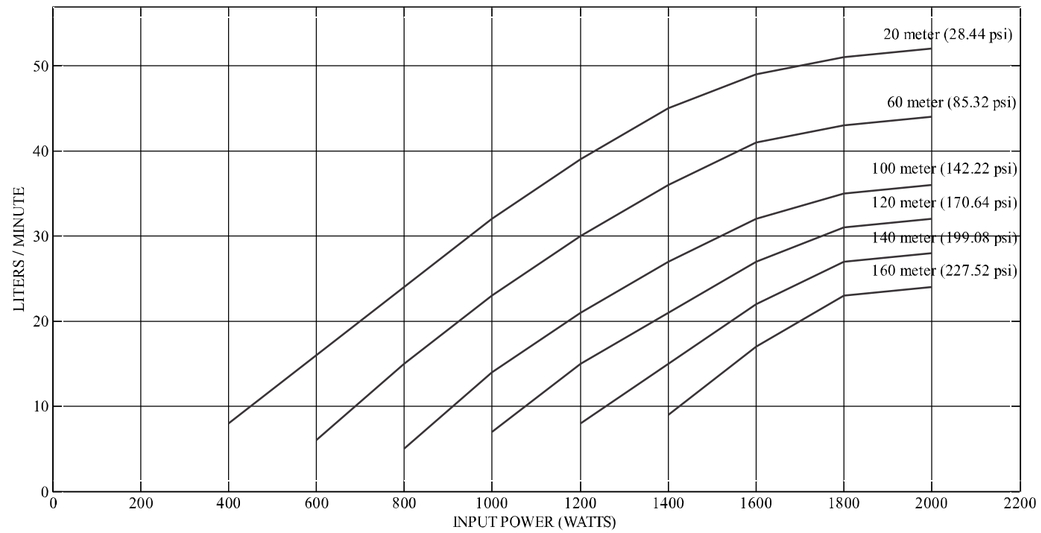


PHOTOVOLTAIC POWER (WATTS)

	1600	1400	1200	1000	800	600	400	300
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
10	224	211	192	170	141	106	69	49
20	188	172	151	124	95	62	25	
30	138	124	104	80	51	18		
40	94	80	60	36	10			

PUMP PERFORMANCE QF2-33, 2 HP

MOTOR 2 HP

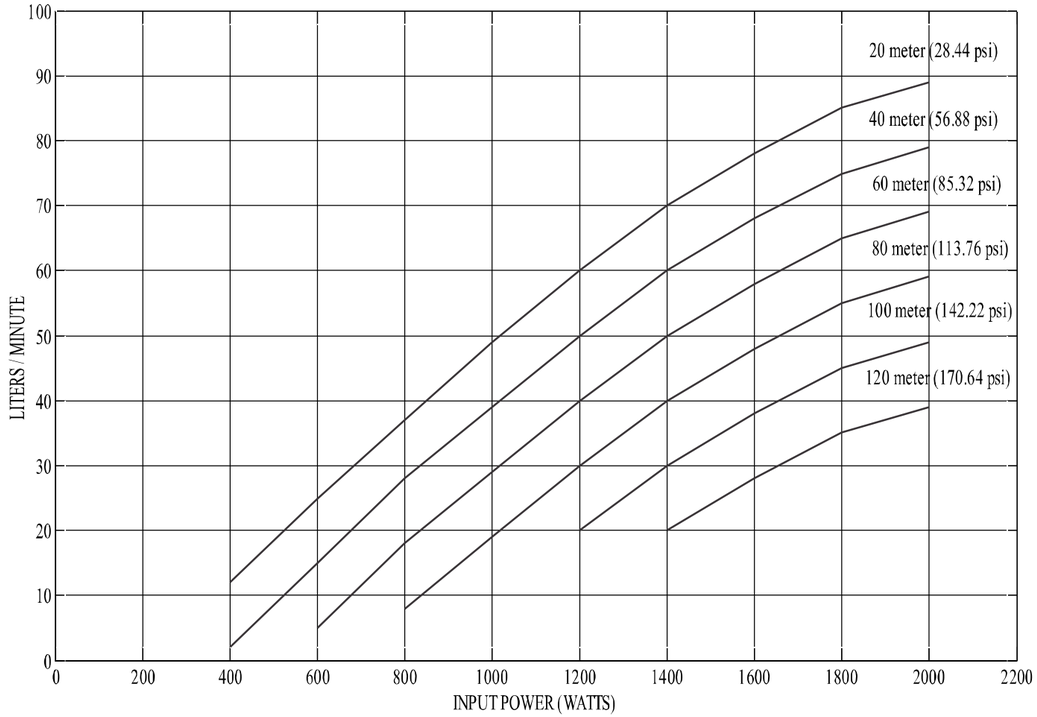


PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
20	52	51	49	45	39	32	24	16	8
60	44	43	41	36	30	23	15	6	
100	36	35	32	27	21	14	5		
120	32	31	27	21	15	7			
140	28	27	22	15	8				
160	24	23	17	9					

PUMP PERFORMANCE QF5-22, 2 HP

MOTOR 2 HP

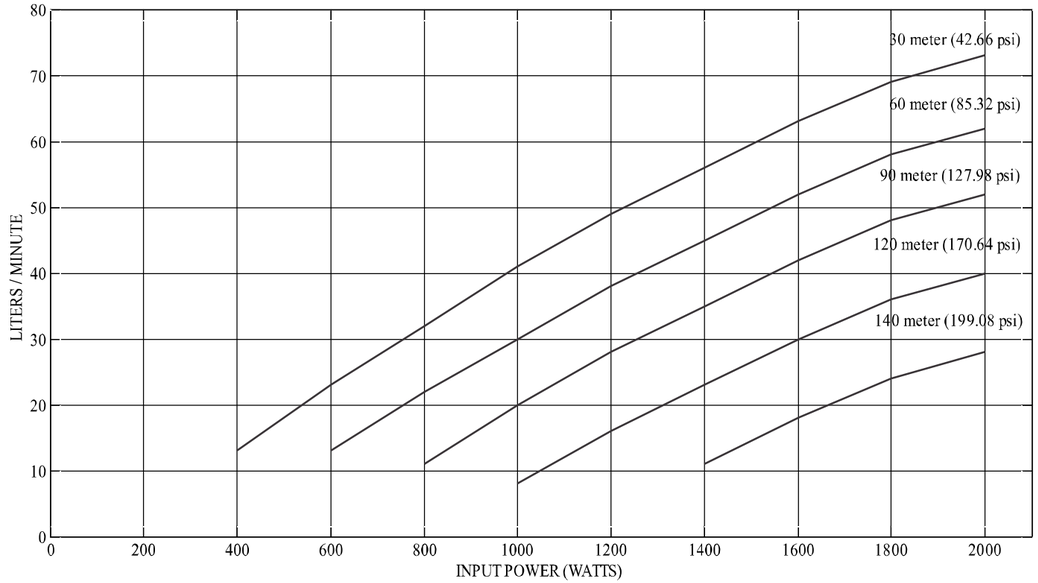


PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
20	89	85	78	70	60	49	37	25	12
40	79	75	68	60	50	39	28	15	2
60	69	65	58	50	40	29	18	5	
80	59	55	48	40	30	19	8		
100	49	45	38	30	20				
120	39	35	28	20					

PUMP PERFORMANCE QF5-25, 2 HP

MOTOR 2 HP

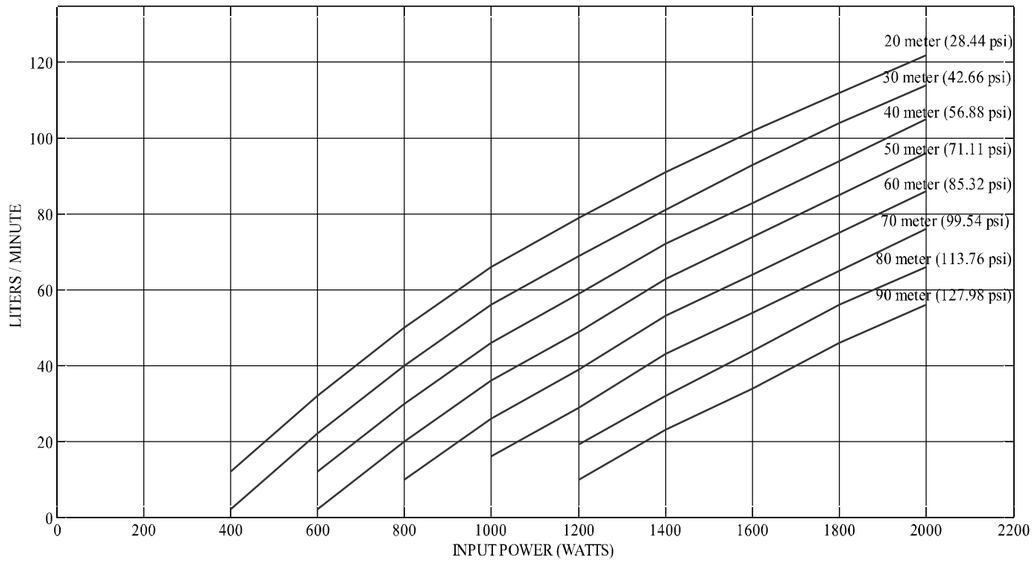


PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
30	72	69	63	56	49	41	32	23	13
60	62	58	52	45	38	30	22	13	
90	52	48	42	35	28	20	11		
120	40	36	30	23	16	8			
140	28	24	18	11					

PUMP PERFORMANCE QF6-17, 2 HP

MOTOR 2 HP

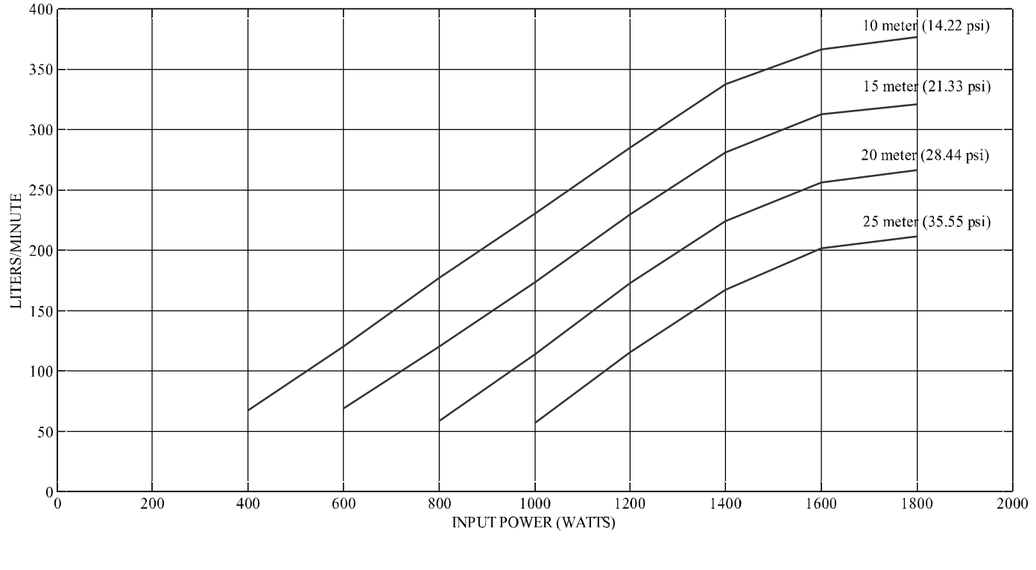


PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
20	122	112	102	91	79	66	50	32	12
30	114	104	93	81	69	56	40	22	02
40	105	94	83	72	59	46	30	12	
50	96	85	74	63	49	36	20	02	
60	86	75	64	53	39	26	10		
70	76	65	54	43	29	16			
80	66	56	44	32	19				
90	56	46	34	23	10				

PUMP PERFORMANCE QF10-3, 2 HP

MOTOR 2 HP

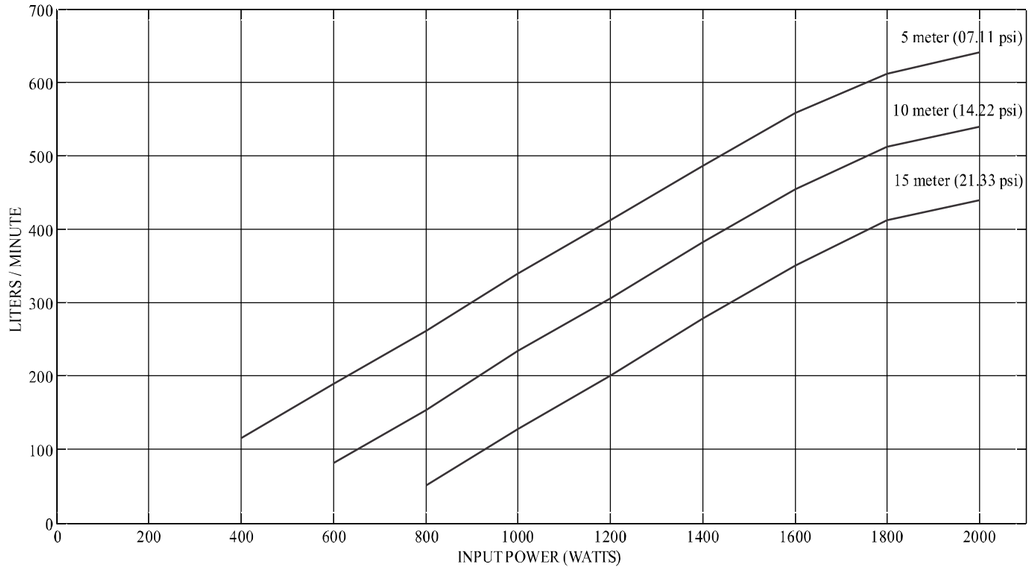


PHOTOVOLTAIC POWER (WATTS)

	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
10	376	366	337	285	230	177	120	67
15	321	312	281	229	173	120	68	
20	266	256	224	172	114	58		
25	211	201	167	115	57			

PUMP PERFORMANCE QF50-2, 2 HP

MOTOR 2 HP

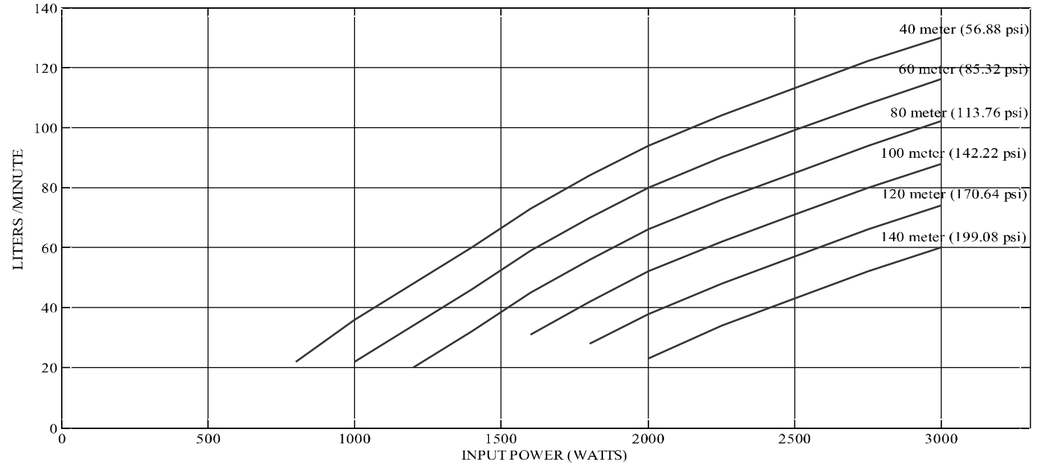


PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
05	640	612	559	486	412	340	262	190	115
10	540	512	455	382	306	234	154	82	
15	440	412	351	278	200	128	51		

PUMP PERFORMANCE QF6-25, 3 HP

MOTOR 3 HP

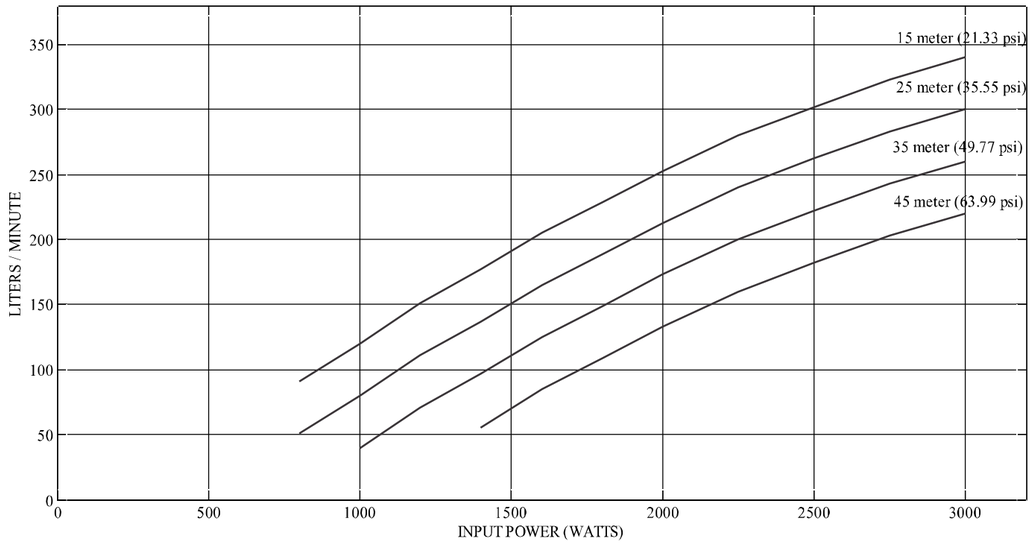


PHOTOVOLTAIC POWER (WATTS)

	3000	2750	2500	2250	2000	1800	1600	1400	1200	1000	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
40	130	122	113	104	94	84	73	60	48	36	22
60	116	108	99	90	80	70	59	46	34	22	
80	102	94	85	76	66	56	45	32	20		
100	88	80	71	62	52	42	31				
120	74	66	57	48	38	28					
140	60	52	43	34	23						

PUMP PERFORMANCE QF8-8, 3 HP

MOTOR 3 HP

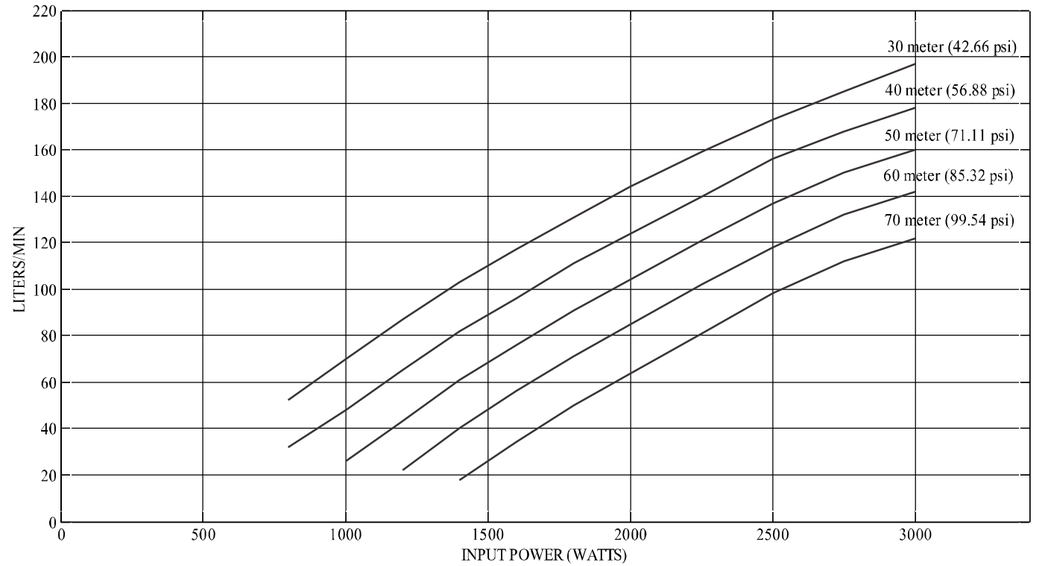


PHOTOVOLTAIC POWER (WATTS)

	3000	2750	2500	2250	2000	1800	1600	1400	1200	1000	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
15	340	323	302	280	253	229	205	177	151	120	91
25	300	283	262	240	213	189	165	137	111	80	51
35	260	243	222	200	173	149	125	97	71	40	
45	220	203	182	160	133	109	85	55			

PUMP PERFORMANCE QF12-15, 3 HP

MOTOR 3 HP

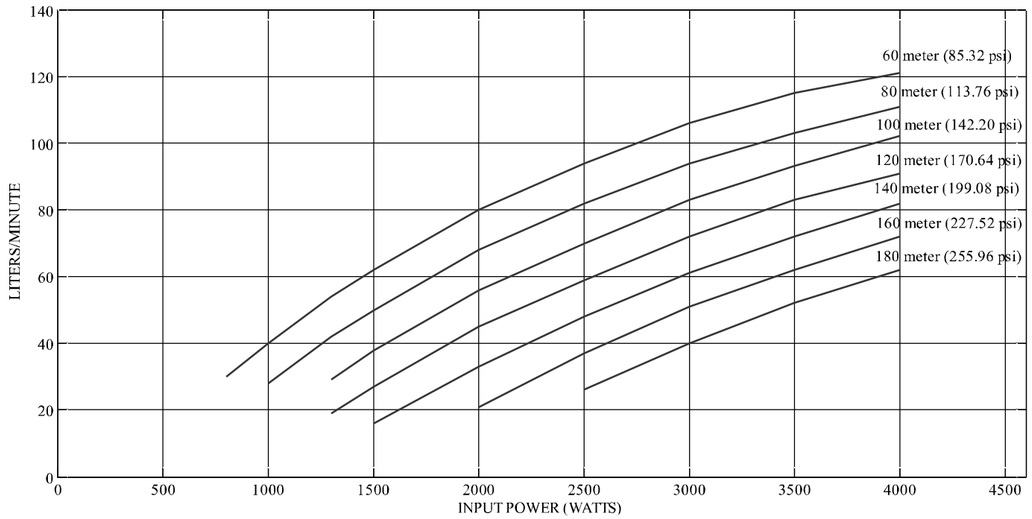


PHOTOVOLTAIC POWER (WATTS)

	3000	2750	2500	2250	2000	1800	1600	1400	1200	1000	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
30	197	185	173	159	144	131	117	103	87	70	52
40	178	168	156	140	124	111	96	82	65	48	62
50	160	150	137	121	104	91	76	61	43	26	
60	142	132	118	102	85	71	56	40	22		
70	122	112	98	81	64	50	34	18			

PUMP PERFORMANCE QF6-33, 4 HP

MOTOR 4 HP

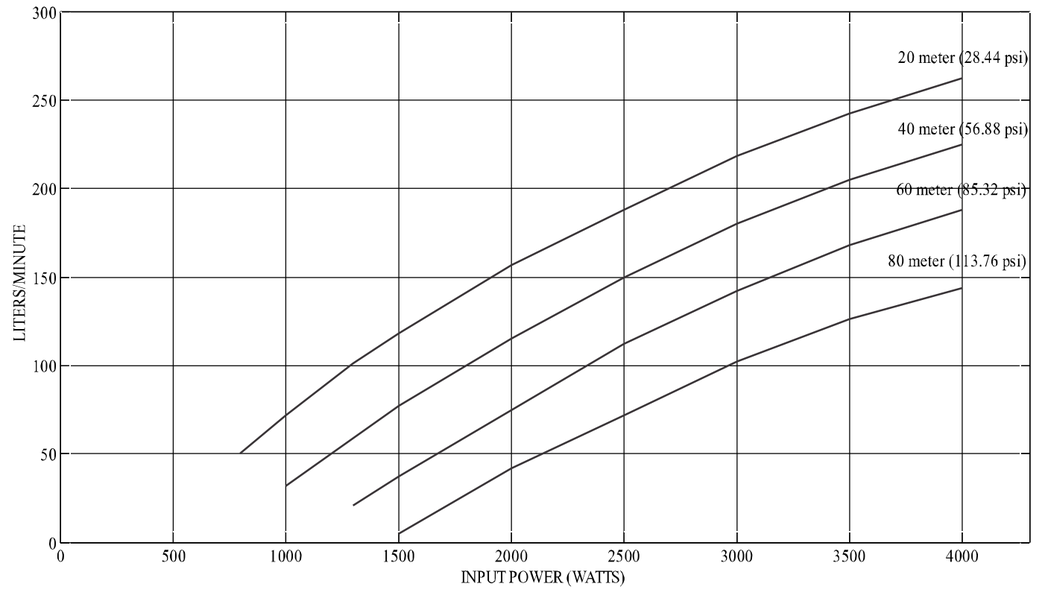


PHOTOVOLTAIC POWER (WATTS)

	4000	3500	3000	2500	2000	1500	1300	1000	800
HEAD (M)	FLOW RATE (LITERS / MINUTE)								
60	121	115	106	94	80	62	54	40	30
80	111	103	94	82	68	50	42	28	
100	102	93	83	70	56	38	29		
120	91	83	72	61	48	33	16		
140	82	72	61	48	33	16			
160	72	62	51	37	21				
180	62	52	40	26					

PUMP PERFORMANCE QF12-18, 4 HP

MOTOR 4 HP

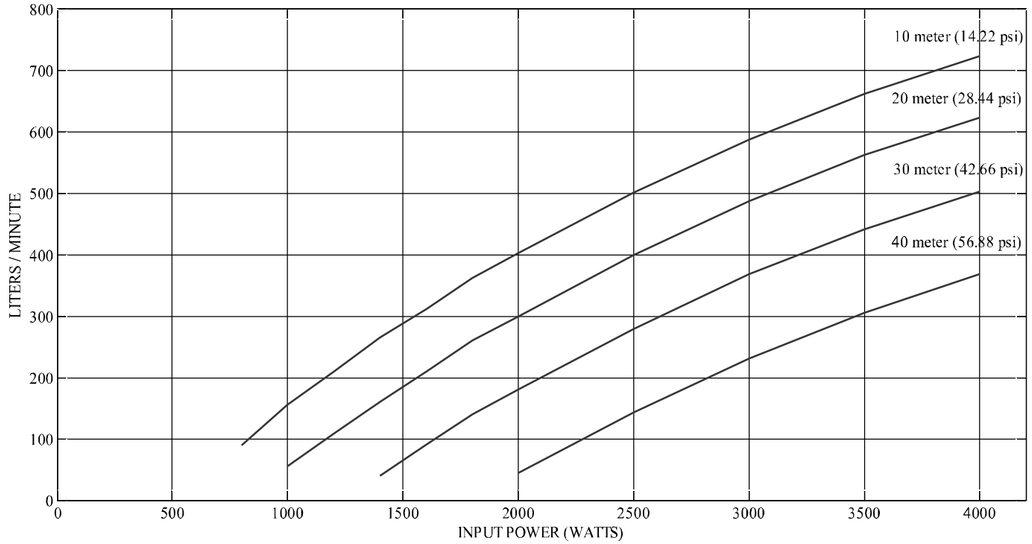


PHOTOVOLTAIC POWER (WATTS)

	4000	3500	3000	2500	2000	1500	1300	1000	800
HEAD (M)	FLOW RATE (LITERS / MINUTE)								
20	262	242	218	188	157	118	101	72	50
40	225	205	180	150	115	77	59	32	
60	188	168	142	112	75	37	21		
80	144	126	102	72	42	5			

PUMP PERFORMANCE QF50-4, 4 HP

MOTOR 4 HP

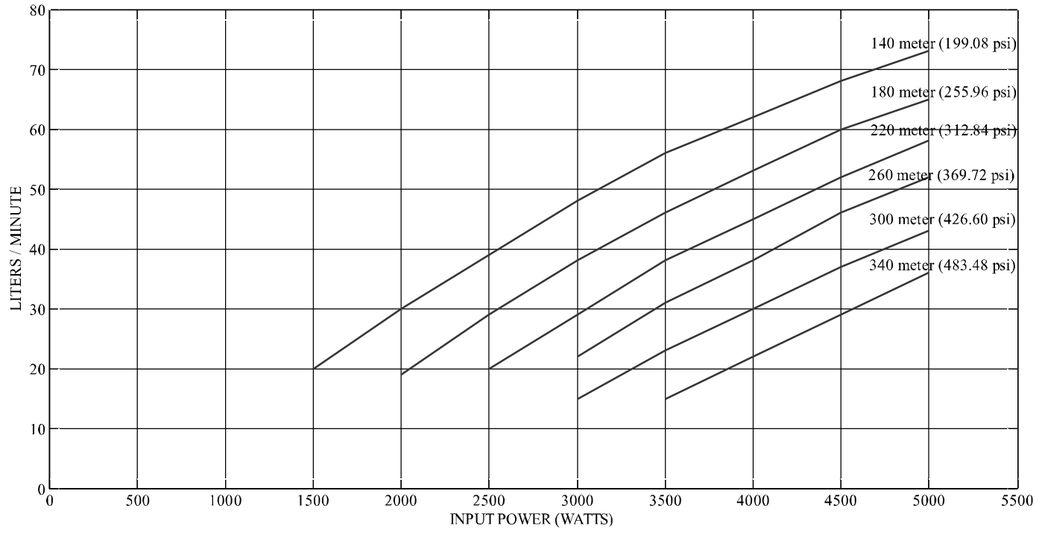


PHOTOVOLTAIC POWER (WATTS)

	4000	3500	3000	2500	2000	1800	1600	1400	1200	1000	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
10	722	662	587	501	402	362	311	265	210	155	90
20	622	562	486	400	300	260	210	160	108	56	
30	502	442	368	279	180	140	92	42			
40	368	306	230	143	44						

PUMP PERFORMANCE QF5-60, 5 HP

MOTOR 5 HP

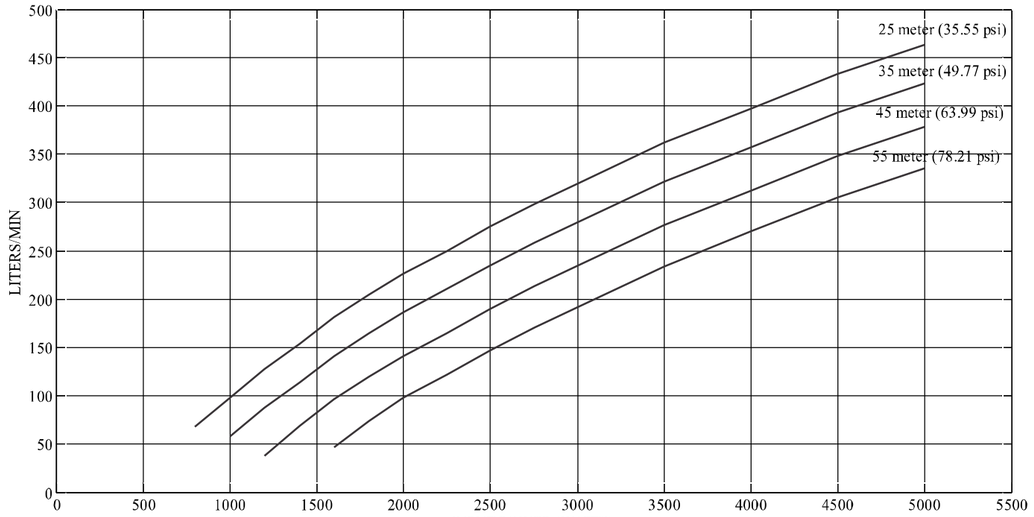


PHOTOVOLTAIC POWER (WATTS)

	5000	4500	4000	3500	3000	2500	2000	1500
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
140	73	68	62	56	48	39	30	20
180	65	60	53	45	38	29	20	
220	58	52	45	38	29	20		
260	52	46	38	31	22			
300	43	37	30	23	15			
340	36	29	22	15				

PUMP PERFORMANCE QF30-7, 5 HP

MOTOR 5 HP

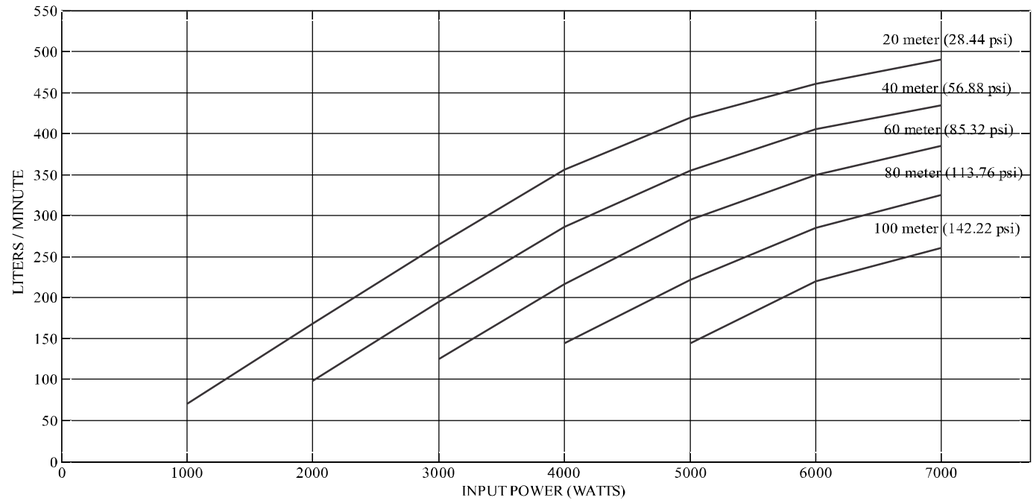


PHOTOVOLTAIC POWER (WATTS)

	5000	4500	4000	3500	3000	2750	2500	2250	2000	1600	1200	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**											
25	463	433	397	362	320	298	275	250	226	181	127	68
35	423	393	357	322	280	258	235	210	186	141	87	
45	378	348	312	277	235	213	190	165	141	96	38	
55	335	305	270	234	192	170	147	122	98	46		

PUMP PERFORMANCE QF30-10, 7.5 HP

MOTOR 7.5 HP

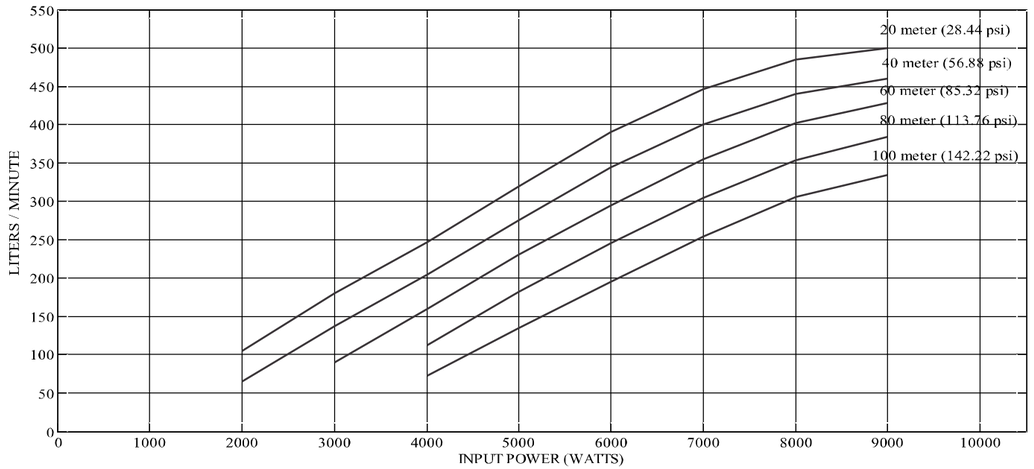


PHOTOVOLTAIC POWER (WATTS)

	7000	6000	5000	4000	3000	2000	1000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**						
20	490	460	420	356	265	168	70
40	435	405	355	286	195	98	
60	385	350	295	216	125		
80	325	285	222	145			
100	260	220	145				

PUMP PERFORMANCE QF30-12, 10 HP

MOTOR 10 HP

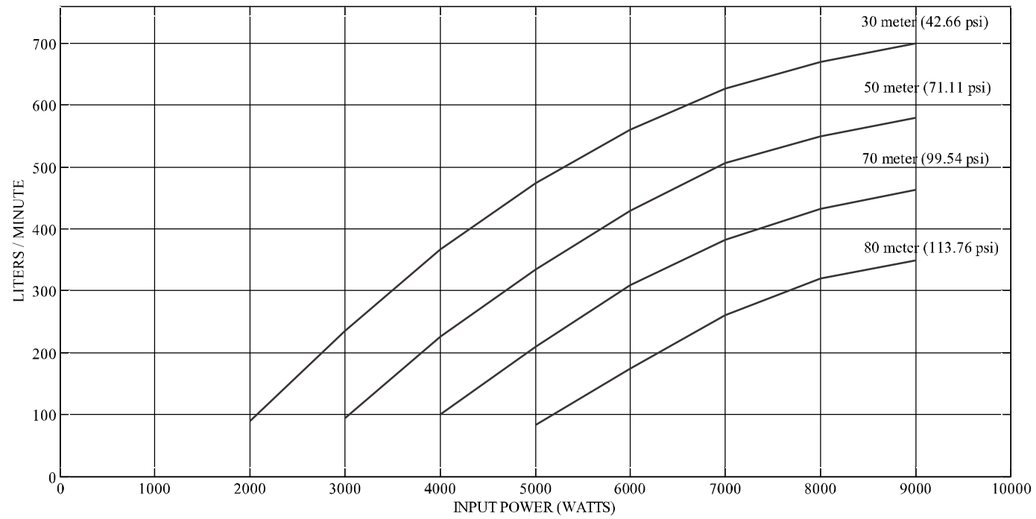


PHOTOVOLTAIC POWER (WATTS)

	9000	8000	7000	6000	5000	4000	3000	2000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
20	500	485	446	390	320	247	180	105
40	460	440	400	344	276	205	137	65
60	428	402	355	295	230	160	90	
80	384	354	305	245	182	112		
100	335	306	254	195	135	72		

PUMP PERFORMANCE QF50-8, 10 HP

MOTOR 10 HP

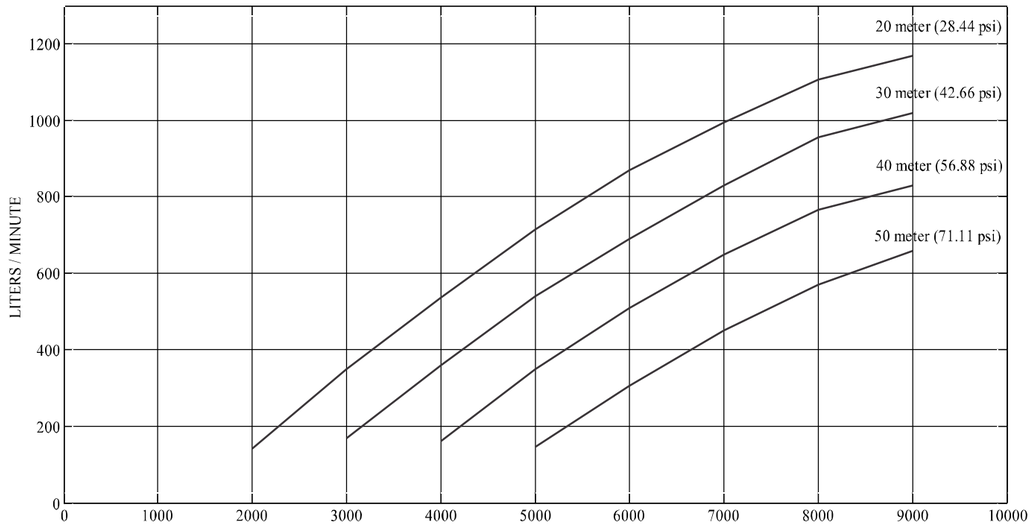


PHOTOVOLTAIC POWER (WATTS)

	9000	8000	7000	6000	5000	4000	3000	2000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**							
30	700	670	627	560	475	367	235	90
50	580	550	507	430	335	227	94	
70	464	433	382	310	210	100		
80	350	320	260	175	84			

PUMP PERFORMANCE QF75-5, 10 HP

MOTOR 10 HP

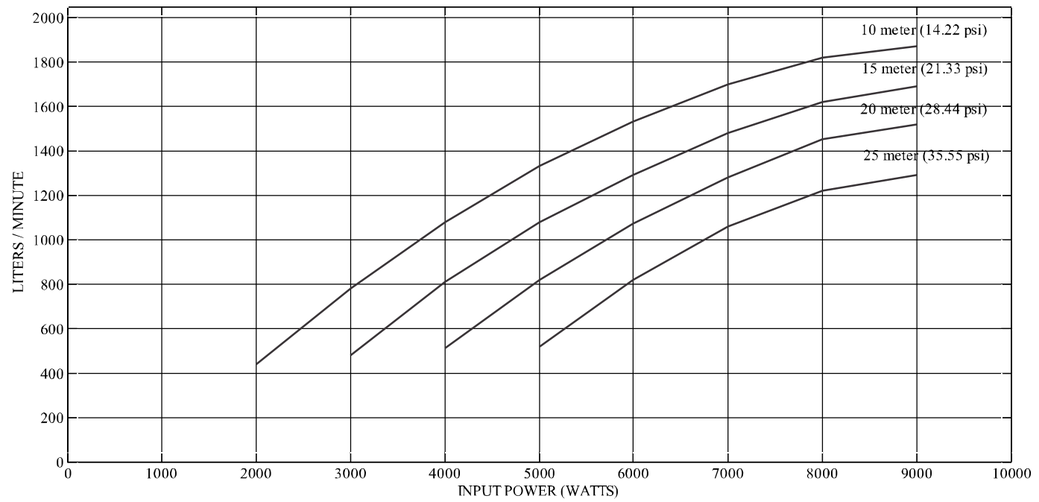


PHOTOVOLTAIC POWER (WATTS)

	9000	8000	7000	6000	5000	4000	3000	2000
HEAD (M)	FLOW RATE (LITERS / MINUTE)							
20	1170	1105	995	870	715	538	348	140
30	1020	955	829	690	539	360	170	
40	830	765	650	540	350	160		
50	660	570	450	305	145			

PUMP PERFORMANCE QF125-2, 10 HP

MOTOR 10 HP

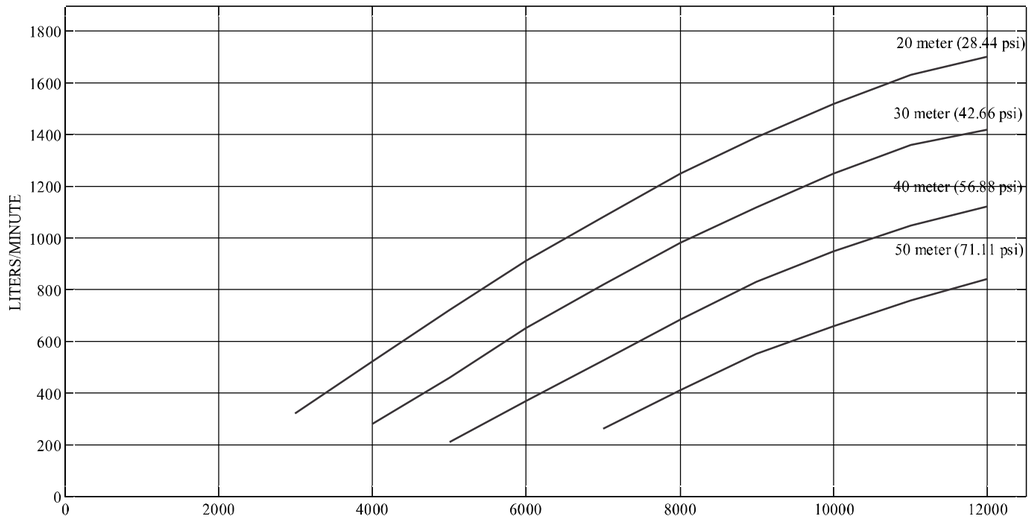


PHOTOVOLTAIC POWER (WATTS)

	9000	8000	7000	6000	5000	4000	3000	2000
HEAD (M)	FLOW RATE (LITERS / MINUTE)							
10	1870	1820	1700	1530	1330	1080	780	440
15	1690	1620	1480	1290	1080	810	480	
20	1520	1450	1280	1070	820	510		
25	1290	1220	1060	820	520			

PUMP PERFORMANCE QF125-3B, 12.5 HP

MOTOR 12.5 HP

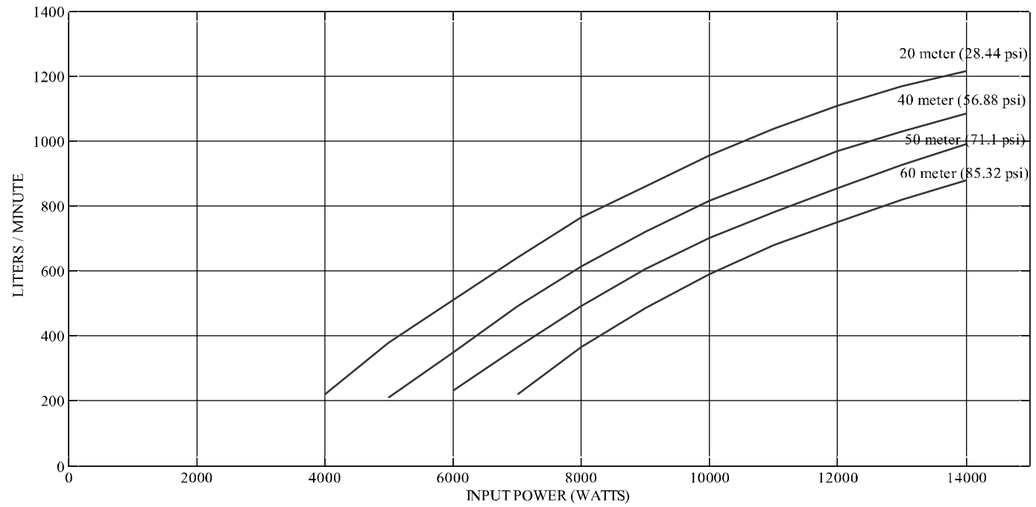


PHOTOVOLTAIC POWER (WATTS)

	12000	11000	10000	9000	8000	7000	6000	5000	4000	3000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**									
20	1700	1630	1520	1390	1250	1080	910	720	520	320
30	1420	1360	1250	1120	980	820	650	460	280	
40	1122	1048	948	828	685	525	370	210		
50	840	760	660	550	410	260				

PUMP PERFORMANCE QF75-8C, 15 HP

MOTOR 15 HP

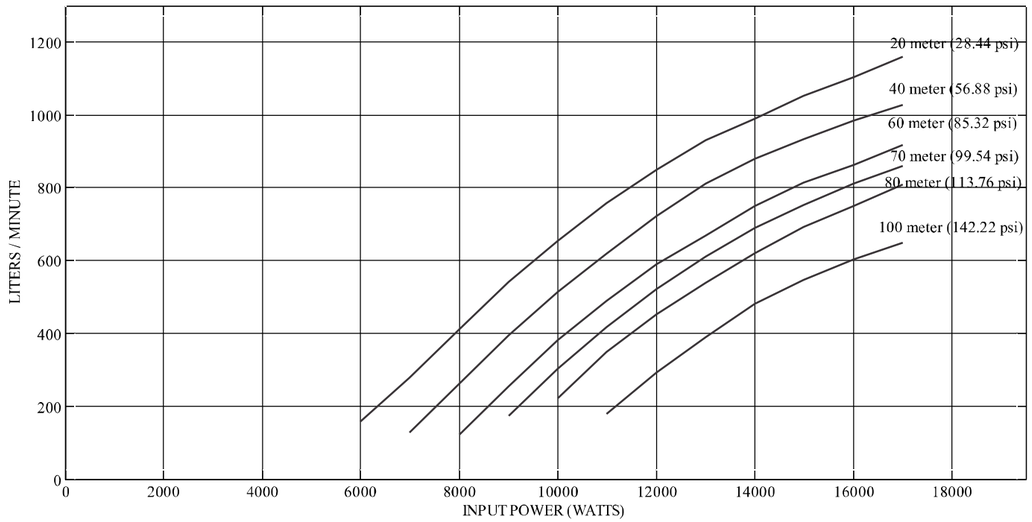


PHOTOVOLTAIC POWER (WATTS)

	14000	13000	12000	11000	10000	9000	8000	7000	6000	5000	4000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
20	1216	1170	1110	1037	957	860	765	640	510	380	220
40	1085	1030	968	892	817	720	615	490	380	210	
50	990	925	855	782	702	605	490	365	230		
60	880	820	750	680	590	485	365	220			

PUMP PERFORMANCE QF75-10, 20 HP

MOTOR 20 HP



PHOTOVOLTAIC POWER (WATTS)

	17000	16000	15000	14000	13000	12000	11000	10000	9000	8000	7000	6000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**											
20	1158	1103	1053	990	930	850	758	653	543	413	278	158
40	1028	983	933	880	810	723	618	513	395	263	128	
60	918	863	813	750	670	590	488	383	255	123		
70	859	810	753	690	610	523	418	303	175			
80	808	751	691	620	540	453	348	223				
100	648	603	548	480	390	293	178					

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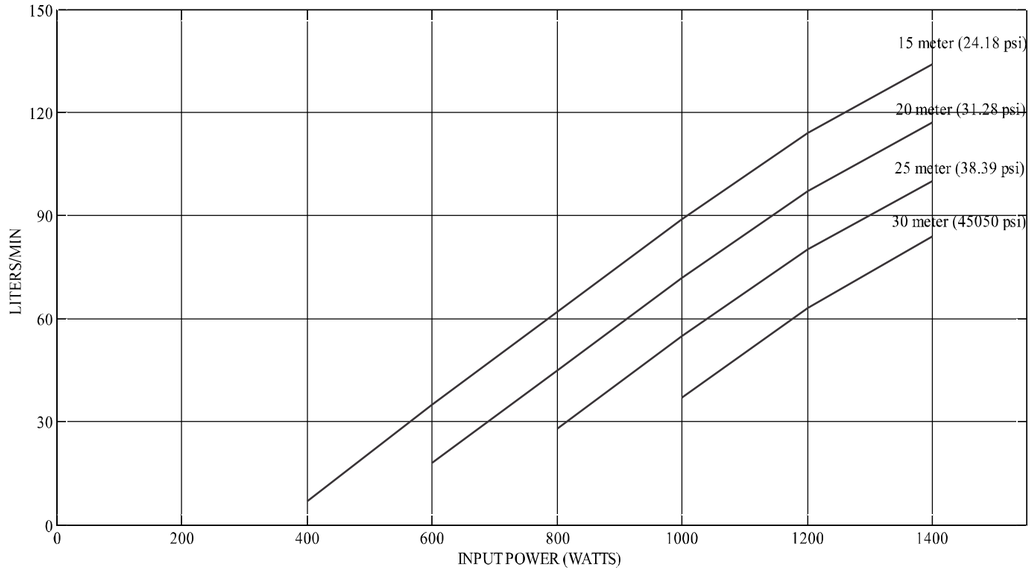
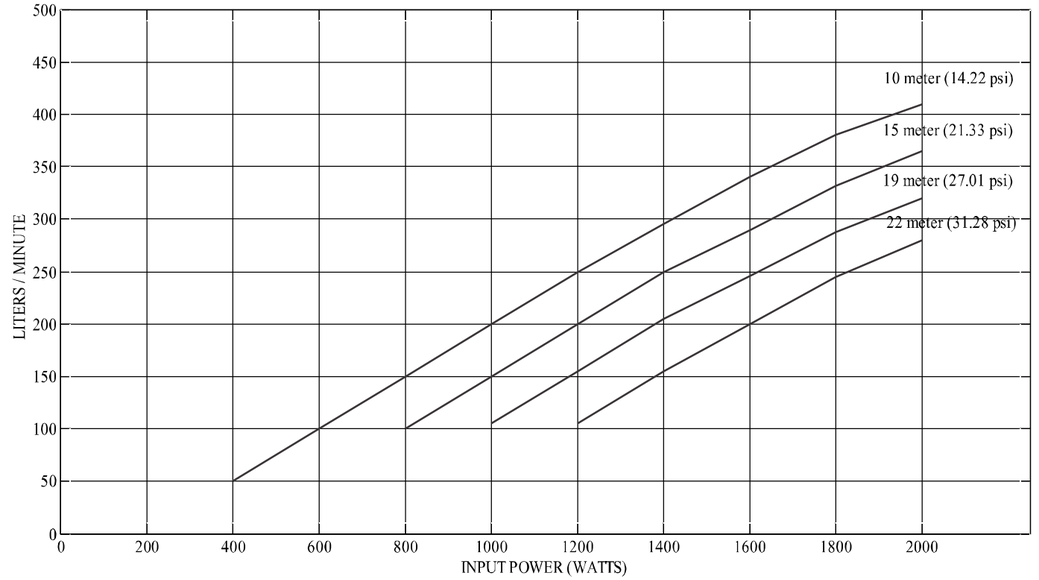
MOTOR 1 HP



PHOTOVOLTAIC POWER (WATTS)

	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**					
15	134	114	89	62	35	7
20	117	97	72	45	18	
25	100	80	55	28		
30	84	63	37			

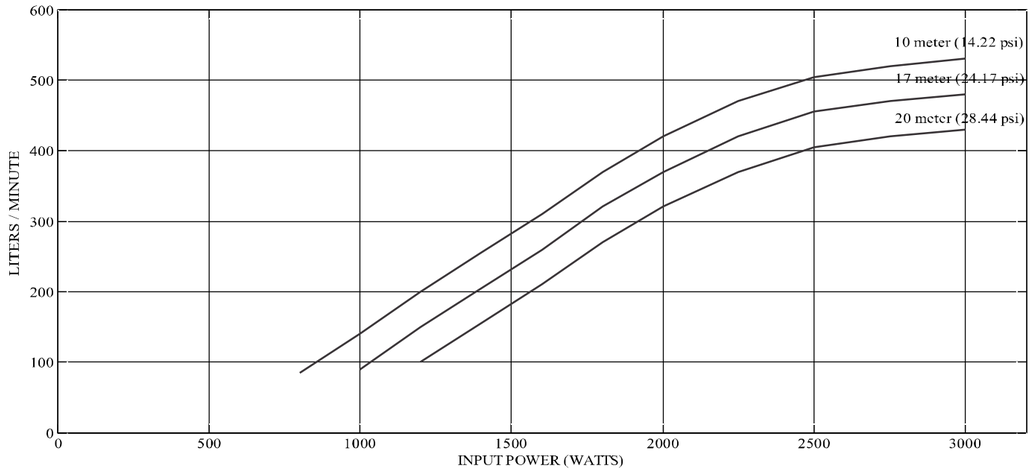
MOTOR 2 HP



PHOTOVOLTAIC POWER (WATTS)

	2000	1800	1600	1400	1200	1000	800	600	400
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
10	410	378	342	300	250	200	150	100	50
15	365	332	290	250	200	150	100		
19	320	288	246	205	155	105			
22	280	245	200	155	105				

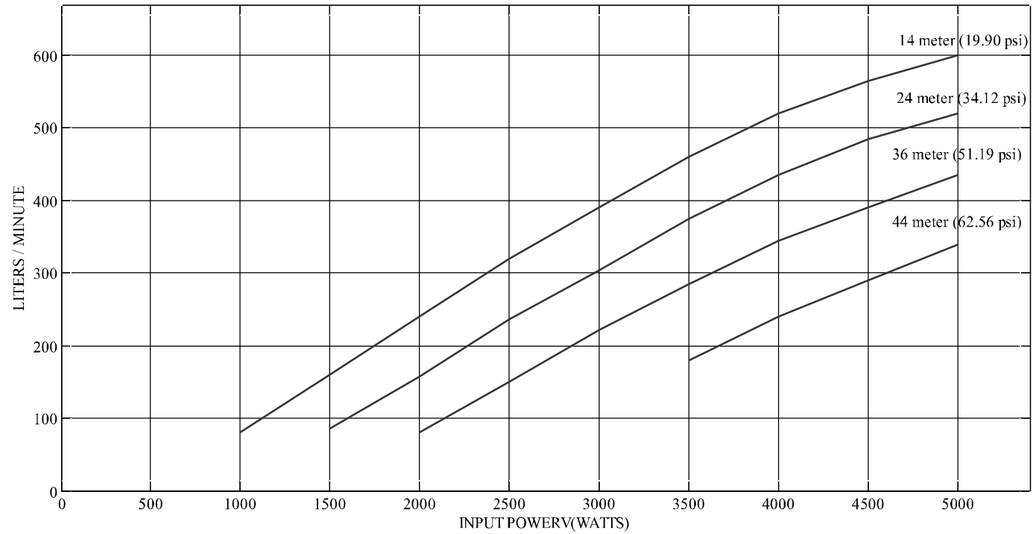
MOTOR 3.0 HP



PHOTOVOLTAIC POWER (WATTS)

	3000	2750	2500	2250	2000	1800	1600	1400	1200	1000	800
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**										
10	530	520	505	470	420	370	310	255	200	140	85
17	480	470	455	420	370	320	260	205	150	90	
20	430	420	405	370	320	270	210	155	100		

MOTOR 5.5 HP



PHOTOVOLTAIC POWER (WATTS)

	5000	4500	4000	3500	3000	2500	2000	1500	1000
HEAD (M)	**FLOW RATE (LITERS / MINUTE)**								
14	600	565	520	460	390	320	240	160	80
24	520	485	435	375	304	236	158	86	
36	435	390	345	285	222	150	80		
44	340	290	240	180					

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