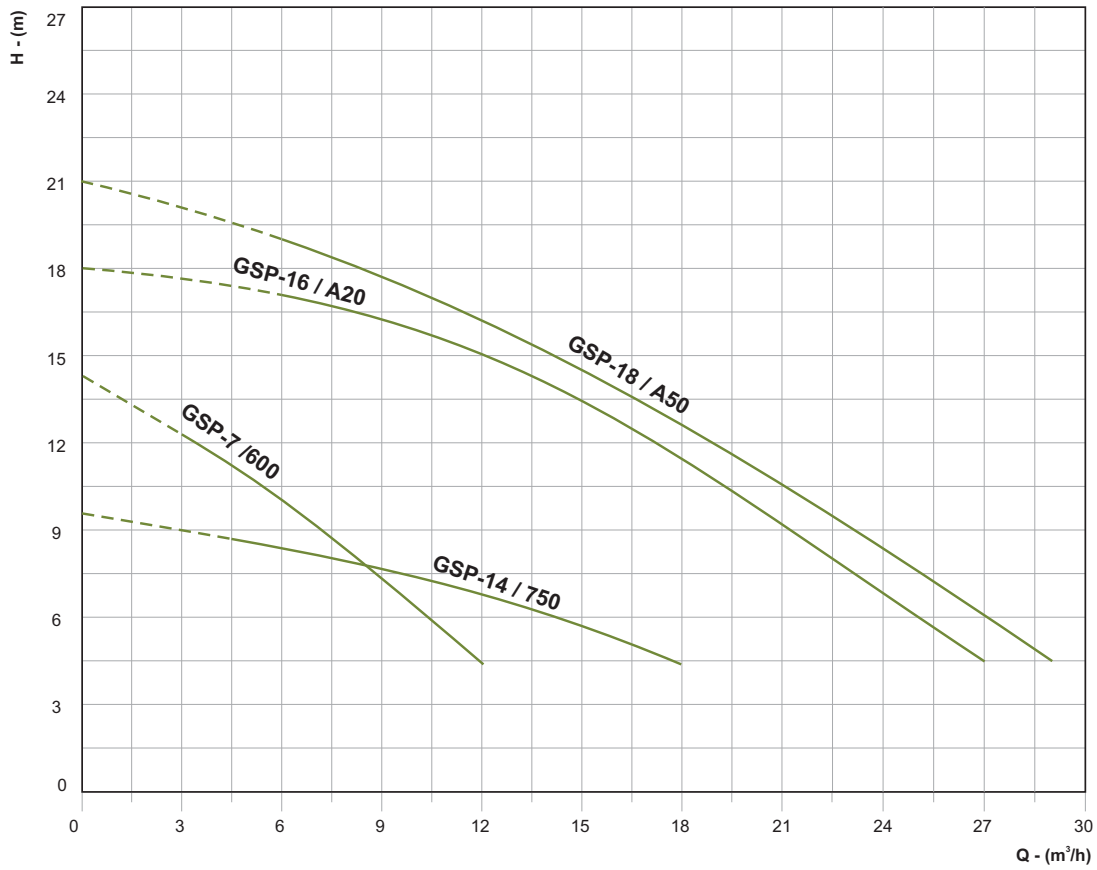
DC Solar
Surface Pumps

SOLAR SWIMMING POOL PUMPS	**SOLAR** SS JET PUMPS
SOLAR PERIPHERAL PUMPS	**SOLAR** SCREW PUMPS

Solar Pool Pumps -GSP Series

PERFORMANCE CURVES



SPECIFICATIONS

Power range	600 - 1500 W
Voltage	48 - 110 V, D.C.
Max. Head	21 m
Max. Discharge	29 m³/h
Pump size	1½" x 1½" & 3" x 3"

PUMPSET CONSIST OF :

- Pump
- Motor
- Control box
- Level sensor probes
- Power cable to connect control box & PV Modules

PERFORMANCE TABLE

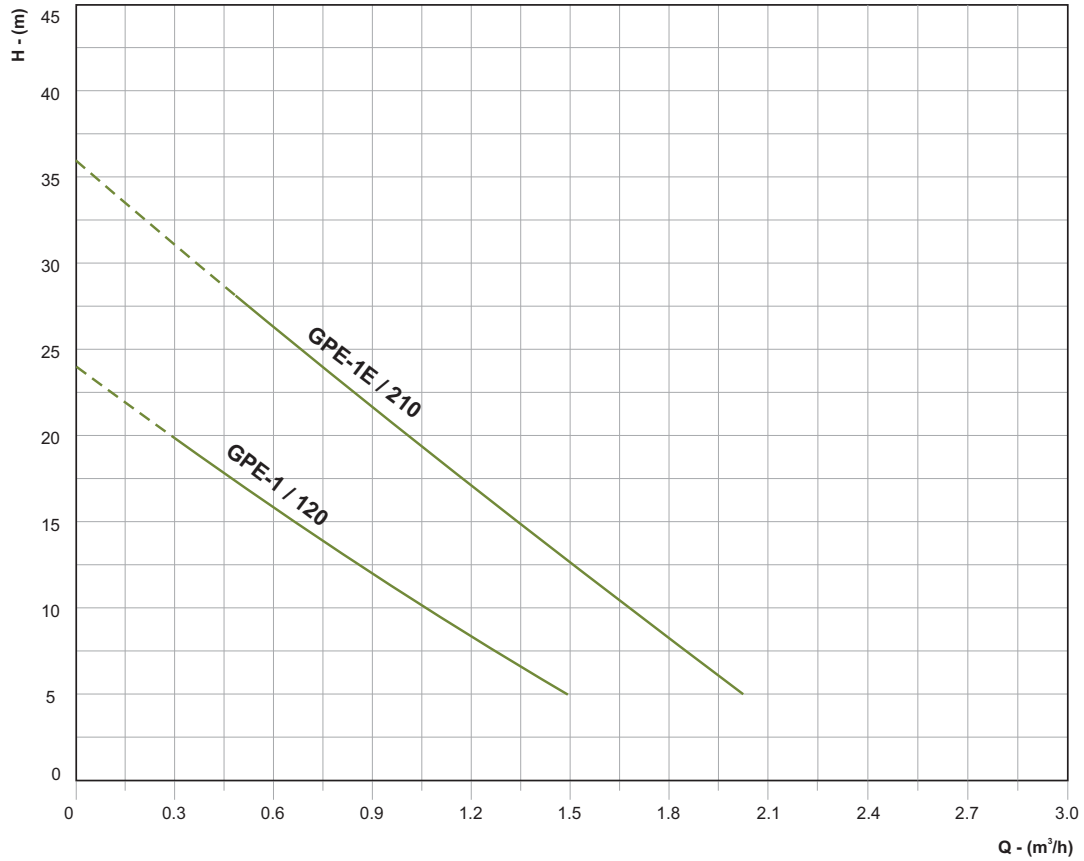
Model	Voltage (V)	Power (W)	Reqd. PV Input Power (W)	Max. Head (m)	Head Range (m)	Flow Range (LPD)*
GSP-7 / 600	48	600	780	15	12 - 4.5	12000 - 48000
GSP-14 / 750	96	750	975	9.2	8.2 - 4.5	18000 - 72000
GSP-16 / A20	110	1200	1560	18	17 - 4.5	24000 - 108000
GSP-18 / A50	110	1500	1950	21	19 - 4.5	22000 - 114000

The above performance curves are plotted under test condition with maximum DC input power.
* Flow range in LPD is calculated based on 4 hours bright sunny day.

In view of continuous developments, the information / descriptions / specifications / illustrations are subject to change without notice.

Solar Peripheral Pumps - GPE Series

PERFORMANCE CURVES



SPECIFICATIONS

Power range	120 - 210 W
Voltage	24 & 36 V, D.C.
Max. Head	36 m
Max. Discharge	2 m³/h
Pump size	1" x 1"

PUMPSET CONSIST OF :

- Pump
- Motor
- Control box
- Level sensor probes
- Power cable to connect control box & PV Modules

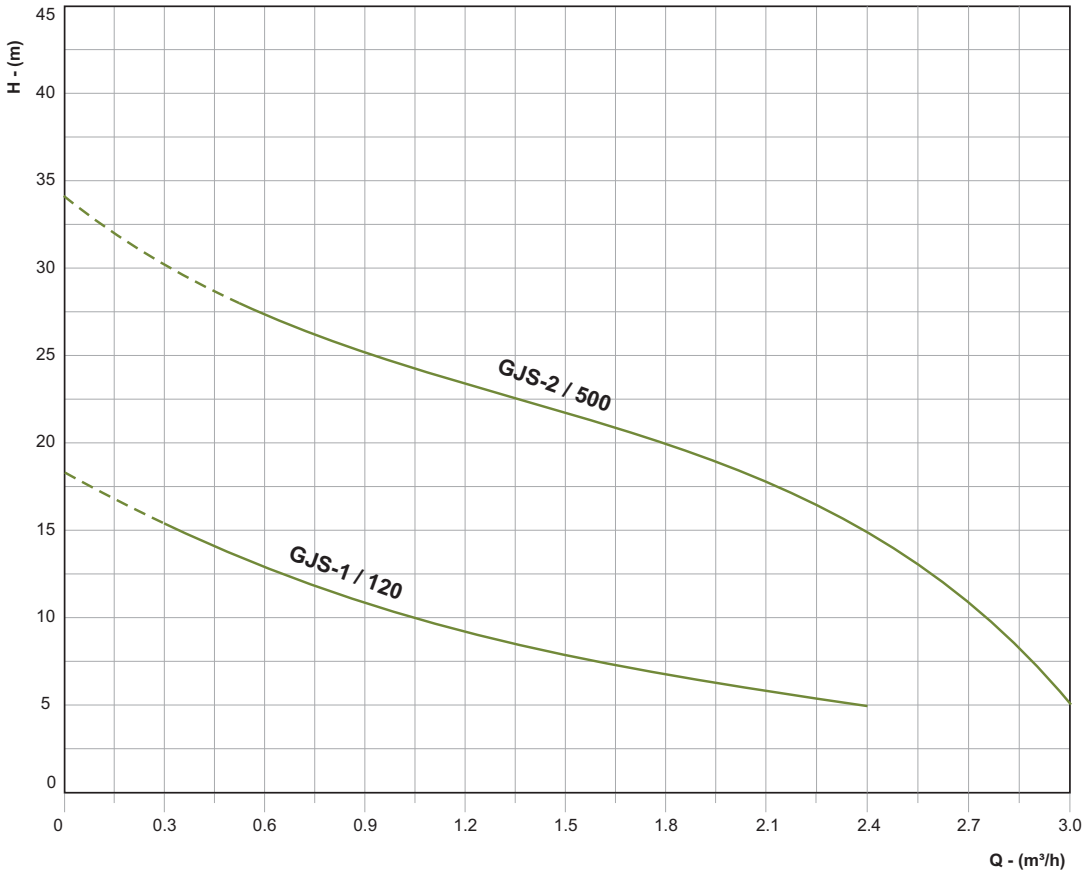
PERFORMANCE TABLE

Model	Voltage (V)	Power (W)	Reqd. PV Input Power (W)	Max. Head (m)	Head Range (m)	Flow Range (LPD)*
GPE-1 / 120	24	120	160	23	20 - 5	1200 - 6000
GPE-1E / 210	36	210	275	36	28 - 5	2000 - 8000

The above performance curves are plotted under test condition with maximum DC input power.
* Flow range in LPD is calculated based on 4 hours bright sunny day.

Solar SS Jet Pumps - GJS Series

PERFORMANCE CURVES



SPECIFICATIONS

Power range	120 - 500 W
Voltage	24 & 48 V, D.C.
Max. Head	34 m
Max. Discharge	3 m³/h
Pump size	1" x 1"

PUMPSET CONSIST OF :

• Pump • Motor • Control box • Level sensor probes • Power cable to connect control box & PV Modules

PERFORMANCE TABLE

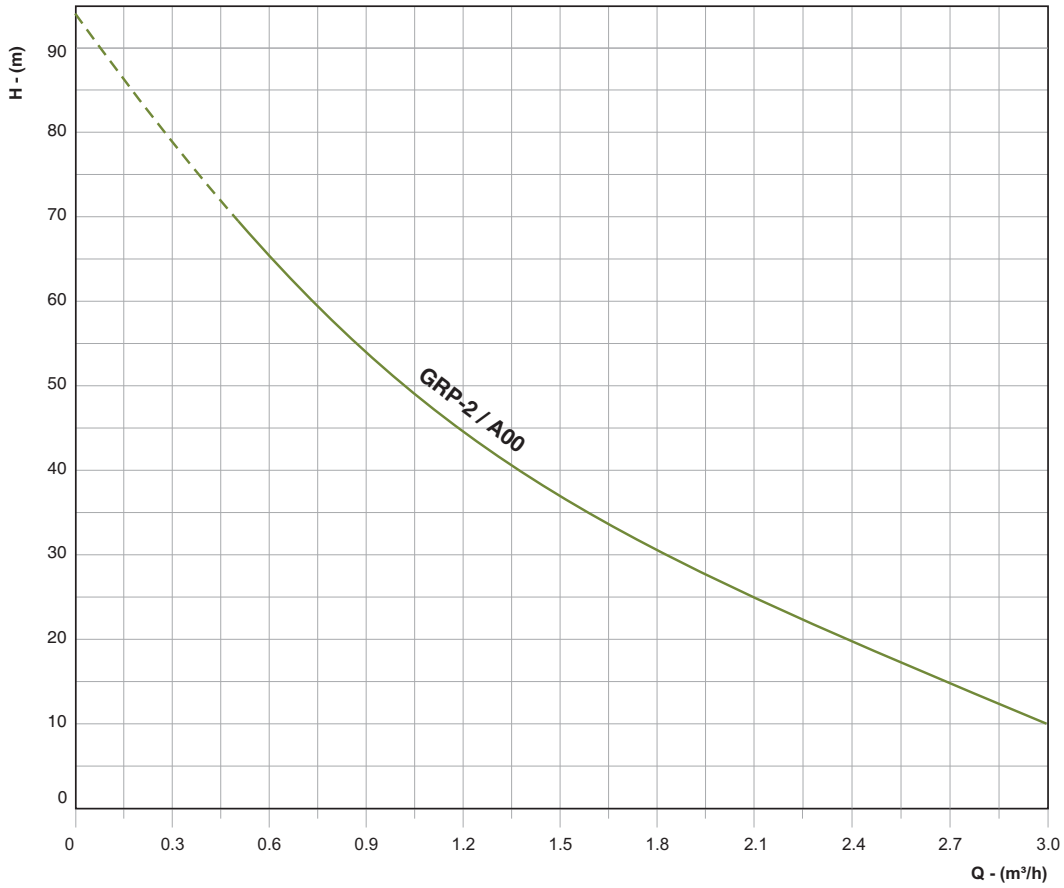
Model	Voltage (V)	Power (W)	Reqd. PV Input Power (W)	Max. Head (m)	Head Range (m)	Flow Range (LPD)*
GJS-1 / 120	24	120	160	18	15 - 5	1200 - 9600
GJS-2 / 500	48	500	650	34	28 - 5	2000 - 12000

The above performance curves are plotted under test condition with maximum DC input power.
* Flow range in LPD is calculated based on 4 hours bright sunny day.

In view of continuous developments, the information / descriptions / specifications / illustrations are subject to change without notice.

Solar Screw Pumps - GRP Series

PERFORMANCE CURVES



SPECIFICATIONS

Power range	1000 W
Voltage	110 V, D.C.
Max. Head	95 m
Max. Discharge	3 m³/h
Pump size	1" x 1"

PUMPSET CONSIST OF :

• Pump • Motor • Control box • Level sensor probes • Power cable to connect control box & PV Modules

PERFORMANCE TABLE

Model	Voltage (V)	Power (W)	Reqd. PV Input Power (W)	Max. Head (m)	Head Range (m)	Flow Range (LPD)*
GRP-2 / A00	110	1000	1400	95	70 - 10	2000 - 12000

The above performance curves is are plotted under test condition with maximum DC input power.
* Flow range in LPD is calculated based on 4 hours bright sunny day.

In view of continuous developments, the information / descriptions / specifications / illustrations are subject to change without notice.

DC Control Box types and Connection Details

Model	GT-12-24	GT-36-48	GT-72-110*
Pump Voltage	12 / 24V DC	36 / 48V DC	72 / 110V DC
PV Input Voltage	> 34V DC	> 68V DC	> 136V DC
PV Max. (VOC)	50V DC	100V DC	200V DC
Battery Input Voltage	12 / 24V DC	36 / 48V DC	-
Low Voltage Cut-off	11 / 22V DC	33 / 46V DC	70 / 108V DC
Restart Voltage	11.7 / 23.4V DC	35 / 47V DC	71 / 109V DC
Rated Current	10 A	10 A	12.5 A
Max. Power	200 W	500 W	1200 W
Max. Ambient Temp.	50°C	50°C	50°C

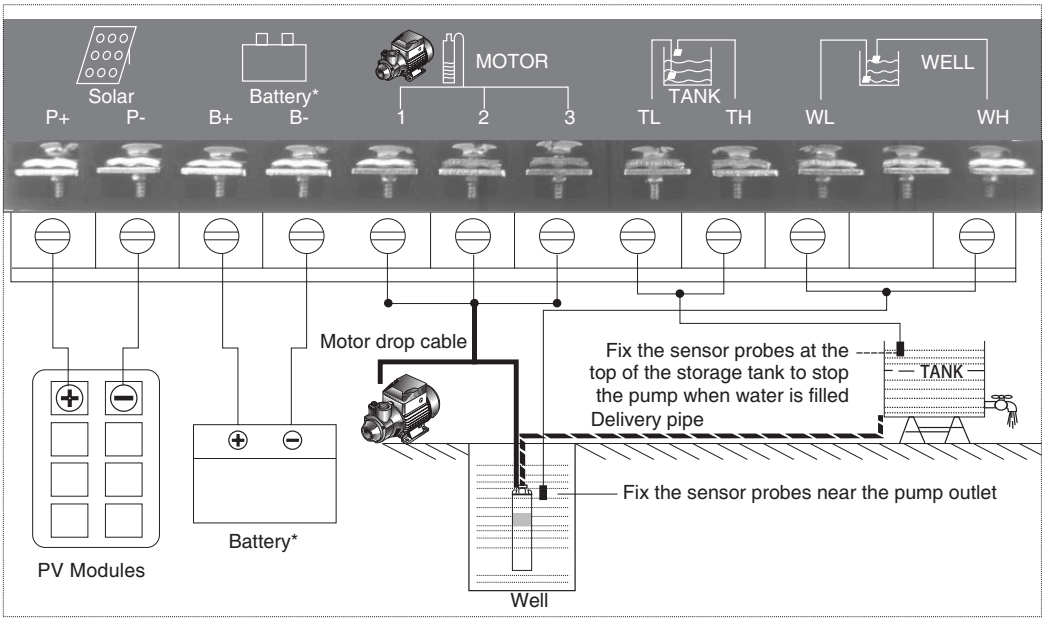
CABLE SIZE & SELECTION

The lead out cable size for submersible pumps upto 500W is 1.5 sq.mm. Use 2 sq.mm cable when installed for more than 20m length.
The lead out cable size for submersible pumps for 1000W is 2 sq.mm. Use 2.5 sq.mm cable when installed for more than 20m length.

INSTALLATION PROCEDURE

1. Open the packing and inspect the pump, control box, PV Modules and other accessories are in good condition.
2. Install the pumpset as like normal submersible / Surface pump and connect it to the control box, PV Modules, battery (if required) & water level sensors as given in the below diagram (fig. 1).
3. The ON / OFF switch must be in middle position (OFF position) while installation

Installation Procedure



The above connection diagram is common for both submersible and surface pump installations.

FIG 1

Note :

1. Solar mode :
   Switch position to **"SOLAR"**
2. Battery mode* :
   Switch position to **"BAT"**

* Battery mode is not available for 1000 W pump models.

In view of continuous developments, the information / descriptions / specifications / illustrations are subject to change without notice.

PV Module Connections

Generally the PV Modules are available with specific Power (watts) and Voltage (volts) combinations. To get the reqd. D.C. output for operating the solar pump we need to either connect the panels in Series or Parallel or combination of Series & Parallel connections.

PV MODULES SELECTION

The power of PV Modules = power of pump x 1.3. The maximum Peak Voltage of the PV Modules must not exceeds the maximum Input Voltage of the system. In case of battery mode operation PV Modules power must be calculated as 1.5 times of pump power.

PV MODULES SELECTION CHART

Pump rating	PV Module Spec-Solar mode operation				PV Modules Connection Method	PV Module Spec-Battery mode operation			
	$P_{max.}$	Vmp	Voc	No. of Modules		$P_{max.}$	Vmp	Voc	No.of Modules
80W / 12V	105W	17-18	21-22	1	Direct	120W	17-18	21-22	1
120W / 24V	160W	34-36	42-44	1	Direct	180W	34-36	42-44	1
210W / 36V	90W	17-18	21-22	3	Series	110W	17-18	21-22	3
230W / 36V	100W	17-18	21-22	3	Series	115W	17-18	21-22	3
300W / 36V	130W	17-18	21-22	3	Series	150W	17-18	21-22	3
500W / 48V	85W	17-18	21-22	8	2x4 modules in series, 2 arrays in parallel	95W	17-18	21-22	8
600W / 48V	130W	24	29.5	6	2x3 modules in series, 2 arrays in parallel	150W	24	29.5	6
1000W / 110V	100W	17-18	21-22	14	2x7 modules in series, 2 arrays in parallel	NA	NA	NA	NA
1200W / 110V	100W	17-18	21-22	16	2x8 modules in series, 2 arrays in parallel	NA	NA	NA	NA
1500W / 110V	120W	17-18	21-22	16	2x8 modules in series, 2 arrays in parallel	NA	NA	NA	NA

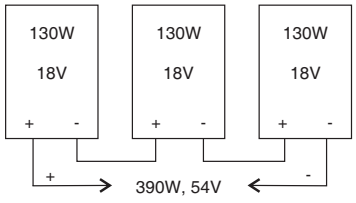
SERIES CONNECTIONS

When the PV Modules are connected in series the output Power as well as Voltage of each Module will gets added.

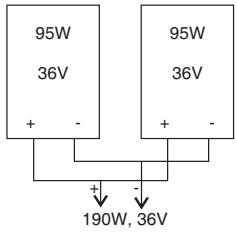
PARALLEL CONNECTIONS

When the PV Modules are connected in parallel the output Power of each Module alone gets added.

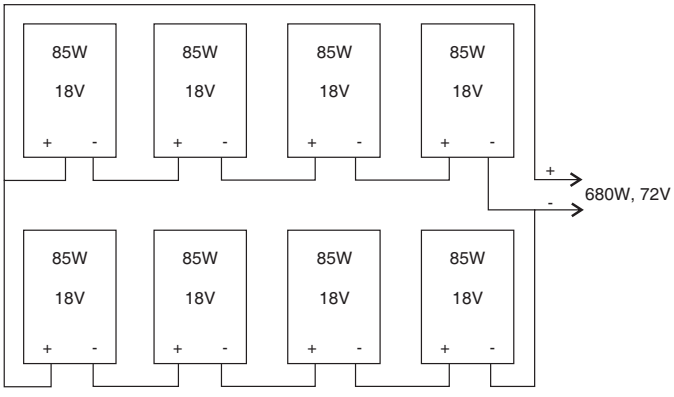
Series connection diagram for 300W, 36V DC Solar Pump



Parallel connection diagram for 150W, 24V DC Solar Pump



Combination of series & parallel connection diagram for 500W, 48V DC Solar Pump



In view of continuous developments, the information / descriptions / specifications / illustrations are subject to change without notice.

Battery Mode Operation

The battery mode option is only available upto 500W DC Solar Pumps & higher power rating pumps do not have this facility. Connect the battery terminals with the control box terminal connections as shown in fig.1 (page 13).

Set the selector switch in the control box to battery mode so that the PV Modules array charges the battery and simultaneously supplies power to run the pump. While the system is operated with battery, the output power of solar modules should be 1.5 times of pump power, so that the battery can get charged and pump can also run simultaneously. When there is low / no sunlight the control box will take required power from batteries to run the pump.

Please refer below table for suitable battery capacities based on the pump voltage.

Pump Voltage	Battery Capacity	Qty	Connection
• 12V D.C. Solar Pump	150AH, 12V Battery	1 No	Direct
• 24V D.C. Solar Pump	150AH, 12V Battery	2 Nos.	Series connection
• 36V D.C. Solar Pump	150AH, 12V Battery	3 Nos.	Series Connection
• 48V D.C. Solar Pump	150AH, 12V Battery	4 Nos.	Series Connection

BATTERY SELECTION PROCEDURE

To calculate the battery capacity : $AH = \frac{T \times P}{V \times 0.6}$

To find the operating time of Pump : $T = \frac{AH \times V \times 0.6}{P}$

T - Pump running time in hours
P - Pump power in Watts
V - Battery voltage
AH - Ampere hour (Battery capacity)

Note : To get the desired Voltage to run the Solar Pumps suitable no. of batteries can be connected in series.

Eg. To run a 24V D.C. Solar Pump, 12V battery x 2nos. need to be connected in series.

Example 1 (Pump running time calculation)

If the pump power is 200W, the battery capacity is 100AH, the battery voltage is 12V and when the battery is fully charged, then the pumpset running hour is calculated as : 100 x 0.6 / (200 / 12) = 3.6 hours.

Example 2 (Battery capacity calculation)

If the pump power is 200W, the battery voltage is 12V, and the battery need to be used for 3.6 hours, then the battery capacity is calculated as : (3.6 / 0.6) x (200 / 12) = 100AH.

Note : The storage battery and frames required for solar panel mounting have to be sourced at customer end or contact our authorized dealer.