

SOLAR MOTOR



[illegible]

M220SOL

SUBMERSIBLE SOLAR MOTOR



M220SOL

M220SOL-H

TECHNICAL DATA

Performance range:

Flow up to 21m³/h and max head of 240 meters

Motor versions:

M220SOL – 0.37 to 2.2kW (55V starting, 150m Pump Head Max)

M220SOL-H – 0.37 to 2.2kW (90V starting, 320m Pump Head Max)

Horizontal Installation:

Minimum 5° angle

Max input limit:

DC: 55 – 440Voc; 12A

90 – 440Voc; (H version)

AC: 90 – 280V; 10A

Max power output (P2): 2200W

Max speed: 3000rpm

Max water temp: 40°C

General Data

- It is the ideal solution for supplying water in remote areas, where the normal power supply of electricity to the power grid is inconsistent or completely unavailable. The DAB Solar Motor is designed for ease of use, requiring no maintenance and is coupled exclusively with the DAB S4 to supply water using solar energy.
- The motor uses rare earth permanent magnets and has a built-in VFD. Vector control and MPPT are used to select the best operating point for the pump providing a highly efficient and cooler operating motor.
- Equipped with a fully built-in inverter and control system to allow direct connection of AC or DC power supplies. The inverter will guarantee even higher system operating efficiencies through less power loss and exposure to temperature variances. Therefore a smaller number of photovoltaic panels are required for the system to operate.
- The M220SOL has a lower starting voltage of 55V DC meaning less solar power required for operation.
- The M220SOL-H has a higher starting voltage requirement of 90V DC giving more support for higher pressure requirements.
- For an integrated fully automated pumping system, it is recommended that every solar motor is installed with a solar controller to use with multiple control inputs and power supplies (AC/DC).
- The Solar motor has dry run protection. If there is insufficient water for 10 seconds the motor will stop. After 60 seconds the motor will restart and run for 10 seconds. If still no water is found, the motor will stop and attempt to restart every 30 minutes.

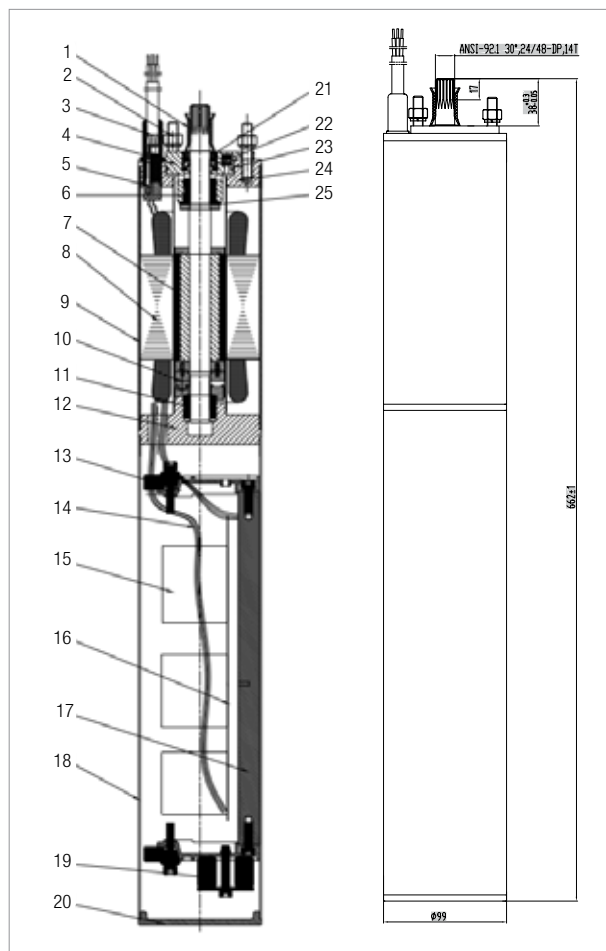
ELECTRICAL DATA								
MOTOR TYPE	AC V	DC V	P2 kW	In AC A	In DC A	AC MAX W	DC MAX W	RPM
MOTOR M220SOL	90-280	55-440	2,2	10	12	2200	3000	3000
MOTOR M220SOL-H	90-280	90-440	2,2	10	12	2200	3000	3000

DIMENSIONS			
MOTOR TYPE	LENGHT mm	WEIGHT kg	DIAMETER mm
MOTOR M220SOL	655	13,5	100
MOTOR M220SOL-H	695	14,5	95

M220SOL

SUBMERSIBLE SOLAR MOTOR

MATERIALS



NO.	COMPONENTS	MATERIAL
1	Sediment /Sand Guard	Fluorine Rubber
2	Fasteners	Stainless steel AISI 316
3	Cable gland	--
4	Upper Bearing Housing	Stainless steel AISI 304L
5	Internal cable connection	Stainless steel AISI 316 / Nitrile rubber
6	Upper Bearing	Graphite
7	Permanent Magnet Rotor	--
8	Stator	--
9	Motor Housing	Stainless steel AISI 304L
10	Thrust Bearing	Graphite / Stainless Steel AISI 420
11	Lower Bearing Support	Graphite
12	Lower Bearing Housing	Stainless steel AISI 304L
13	Stent	--
14	Internal Wire	--
15	Capacitor	--
16	PABA	--
17	Radiator	Aluminium
18	Base Plate	Stainless steel AISI 304L
19	Inductor	--
20	Base	Stainless Steel 304
21	Mechanical Seal / Sand Ring	Silicone Carbide
22	Lip Seal	Nitrile Rubber
23	O Ring	Nitrile Rubber
24	Upper Housing	Stainless steel AISI 304L
25	Wear Pads	Polytetrafluoroethylene

M220CON

SOLAR MOTOR CONTROLLER



General Data

The M220CON controller is a microcontroller, designed, developed and manufactured for the DAB Solar motor. It is suitable for simultaneous AC and DC incoming power supplies. The controller is capable of switching manually or automatically between two power supplies depending on DC/Solar power availability.

AC, DC power mode or AUTO mode switchable.

In AC mode, the incoming power source can be from the main power supply or a generator. In DC mode, the power supply is from solar panels. However, DC will be the favoured power supply. When DC power source is below minimum 55V (M220) or 90V (M220-H) the device shuts down the supply for 10min's then switches to AC power when DC power returns it automatically switches back.

Features

- The M220CON controller can take signals from two digital switches placed in a tank or similar.
- The controller can also be configured as a pressure system with pressure switch, non-return valve and pressure tank.
- The high-level float LED light on the M220CON controller will indicate that the tank is full and will stop the pump.
- The low-level float LED light on the M220CON controller will indicate that the tank is empty and will start the pump after 10 minutes.
- On power-up, if the tank is not full, then the M220CON controller powers the pump to fill the tank.
- The M220CON controller is suitable for outdoor installation and is weather-proof (IP65 enclosure). However, installation in direct sunlight should be avoided.

Adjustable Generator shut off timer to prevent repeated starting:

- The controller will automatically switch between DC and AC depending on device voltage.
- This timer locks the generator into a run state while the DC input stabilizes.

Adjustable Flow sensor restart timer:

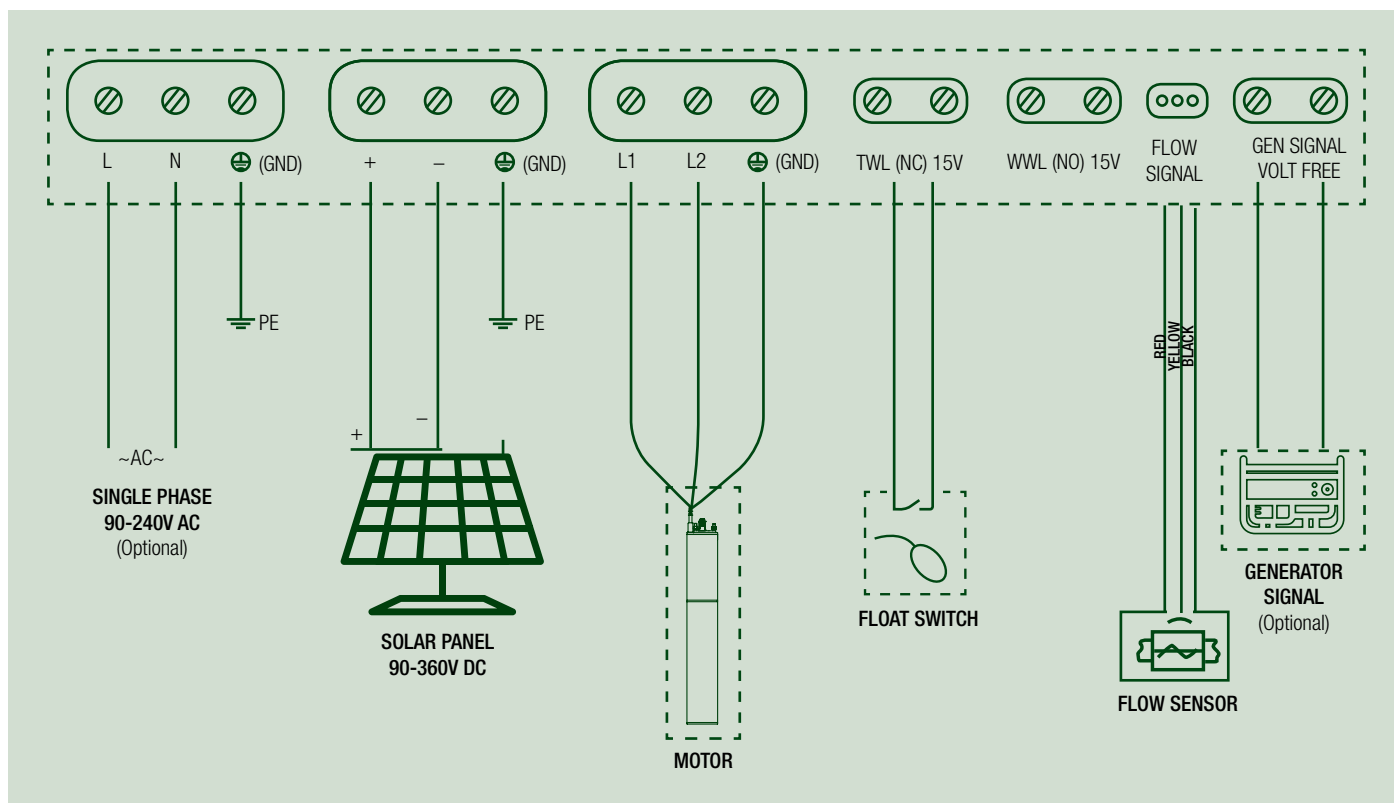
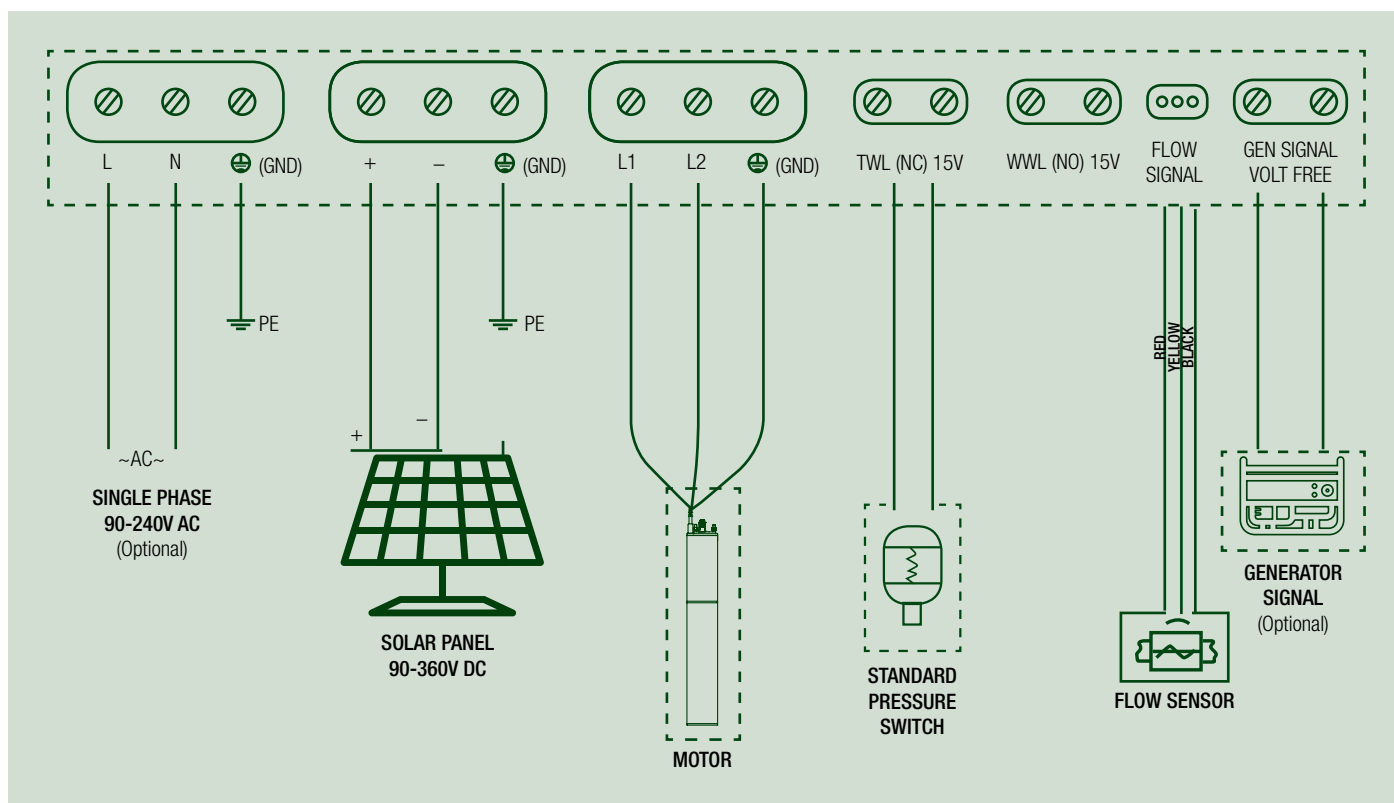
- Adjust restart delay after no flow, ideal for low yielding water source applications.
- Once zero flow is detected the control will maintain operation for 3 minutes then turn off the pump.
- There is a two minute lock out cycle when power is supplied to the controller.

Sizing of Generator:

- Total W of the solar array, multiplied by 1.1 and then divided by 0,8 to arrive at the minimum kVa required from the generator.

MOTOR CONTROLLER

WIRING DIAGRAM



ACCESSORIES

SOLAR MOTOR ACCESSORIES

Flow Sensor	Item Desc	Specification
	FLOW SENSOR 2" WITH WATERPROOF CONNECTION	Inlet & outlet diameter is 2", flow range 10-300L/min, working voltage 3-24V, pulse characteristic F=0.2*Q, pressure range $\Rightarrow$ 2.0MPa (To be used with waterproof cable)

Waterproof cable	Item Desc	Specification
	FLOW SENSOR CABLE - 10M EXTRA LENGTH WATERPROOF	10 meters extra length waterproof cable to suit flow sensor with waterproof connectors

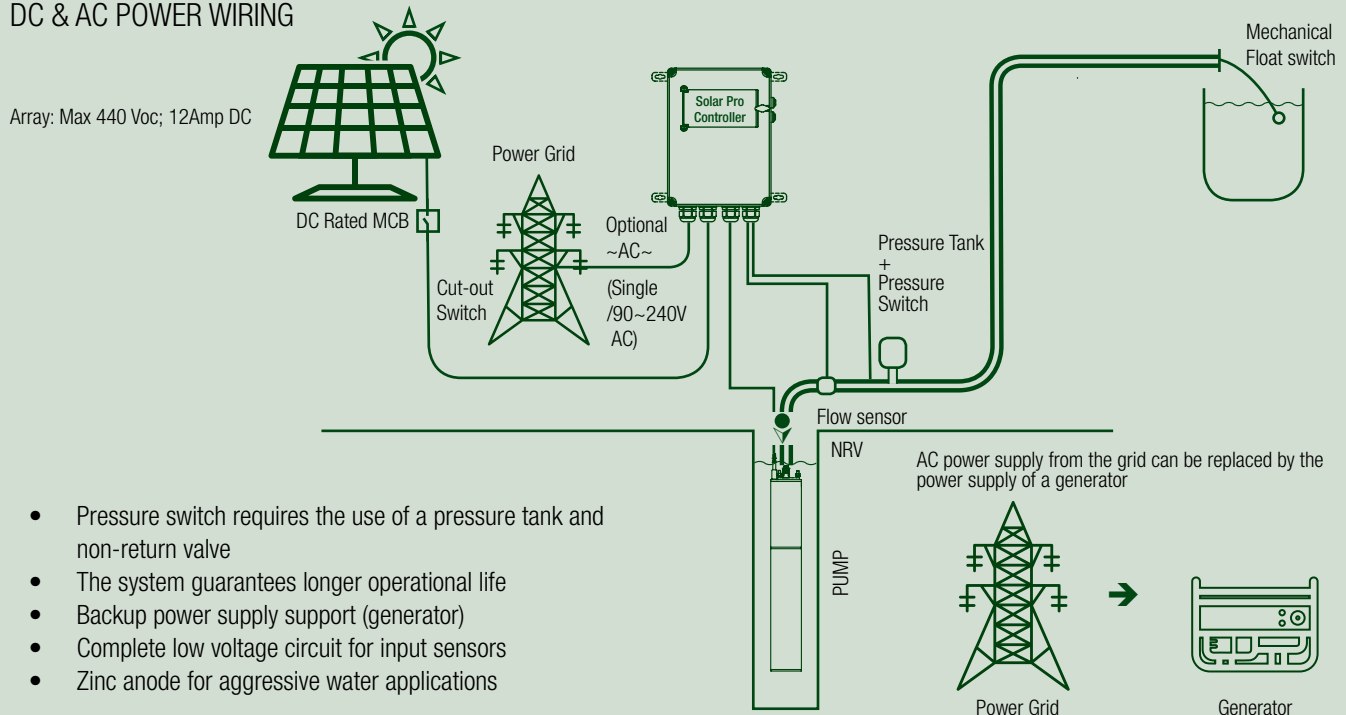
Zinc Anode	Item Desc	Specification
	ZINC ANODE CLAMP ON - 50MM	50mm Clamp on, Zinc Anode

CABLE SELECTION

													Cable Length H (Up to 'X' Meters)									
Solar Panel Sizing					All Electrical Data @ STC								10	25	50	75	100	125	150	200	250	300
Solar Panel Qty	Wattage	Max DC Solar Power (W)	Size	Strings	VOC (V)		VMPP (V)		ISC (A)		IMPP (A)		Cross Section MM2									
2	315	630	120 cell	1	40.11	80.22	33.84	67.68	9.76	9.76	9.31	9.31	2.5	6	10	16	25	25	35	50	50	
3	315	945	120 cell	1	40.11	120.33	33.84	101.52	9.76	9.76	9.31	9.31	1.5	4	6	10	16	16	25	35	35	50
4	315	1260	120 cell	1	40.11	160.44	33.84	135.36	9.76	9.76	9.31	9.31	1.5	2.5	6	10	10	16	16	25	25	25
5	315	1575	120 cell	1	40.11	200.55	33.84	169.20	9.76	9.76	9.31	9.31	1.5	2.5	4	6	10	10	10	16	25	25
6	315	1890	120 cell	1	40.11	240.66	33.84	203.04	9.76	9.76	9.31	9.31	1.5	1.5	4	6	6	10	10	16	16	25
7	315	2205	120 cell	1	40.11	280.77	33.84	236.88	9.76	9.76	9.31	9.31	1.5	1.5	2.5	4	6	6	10	10	16	16
8	315	2520	120 cell	1	40.11	320.88	33.84	270.72	9.76	9.76	9.31	9.31	1.5	1.5	2.5	4	6	6	10	10	16	16
9	315	2835	120 cell	1	40.11	360.99	33.84	304.56	9.76	9.76	9.31	9.31	1.5	1.5	2.5	4	4	6	6	10	10	16
10	315	3150	120 cell	1	40.11	401.10	33.84	338.40	9.76	9.76	9.31	9.31	1.5	1.5	2.5	2.5	4	6	6	10	10	10

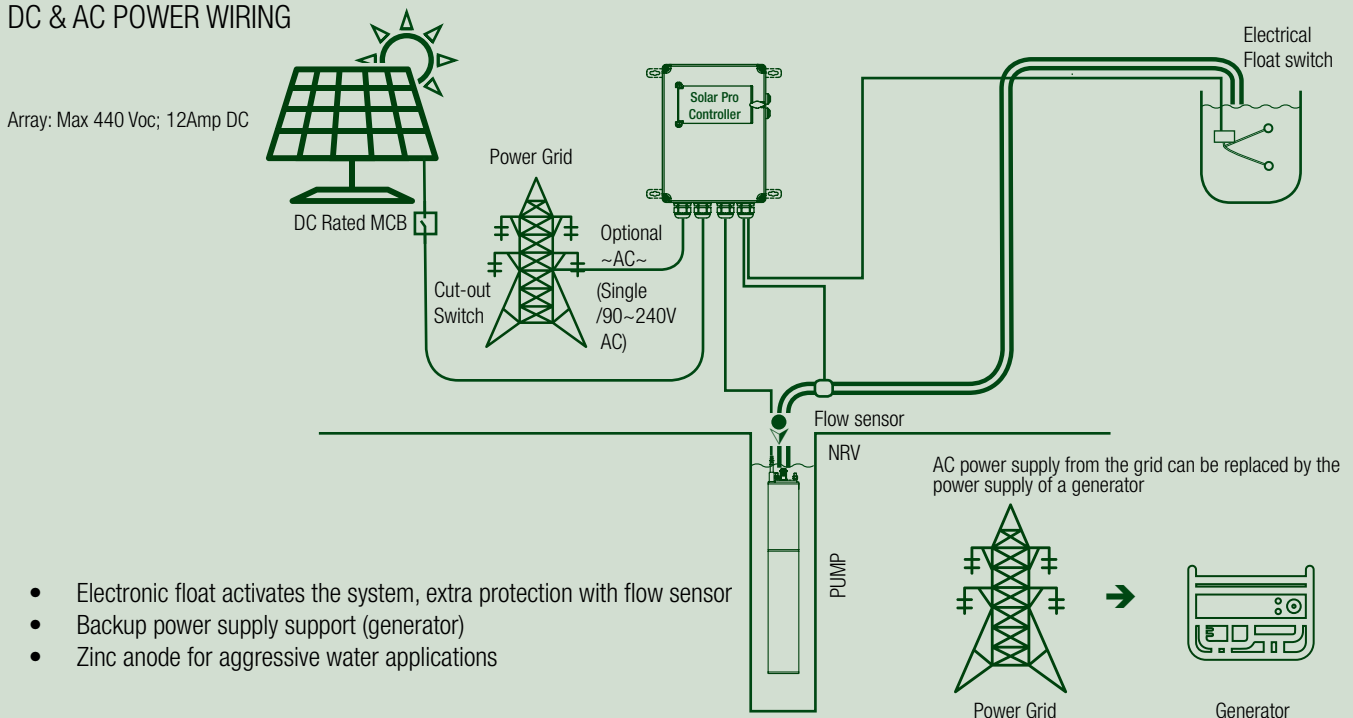
Option 1: System using Mechanical float switch, Pressure switch, Pressure tank, Flow sensor & NRV

DC & AC POWER WIRING



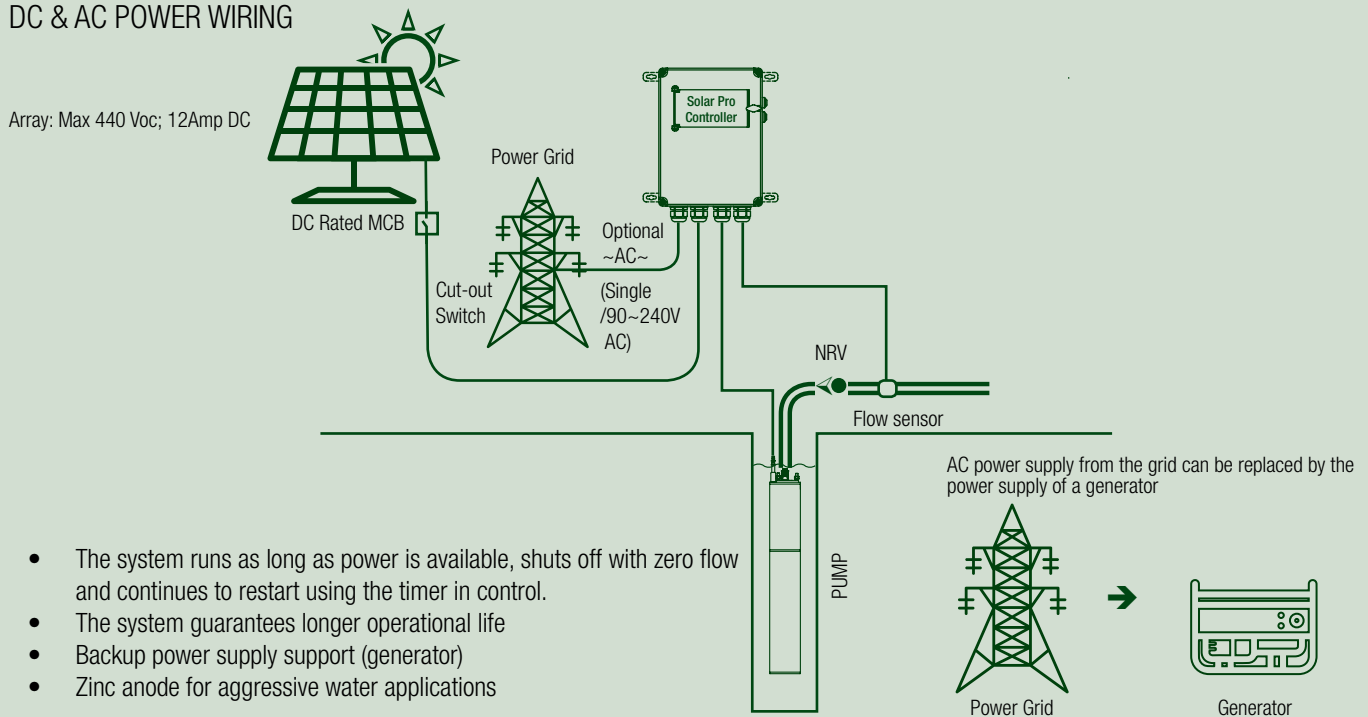
Option 2: System using Electronic float switch, Flow sensor & NRV

DC & AC POWER WIRING



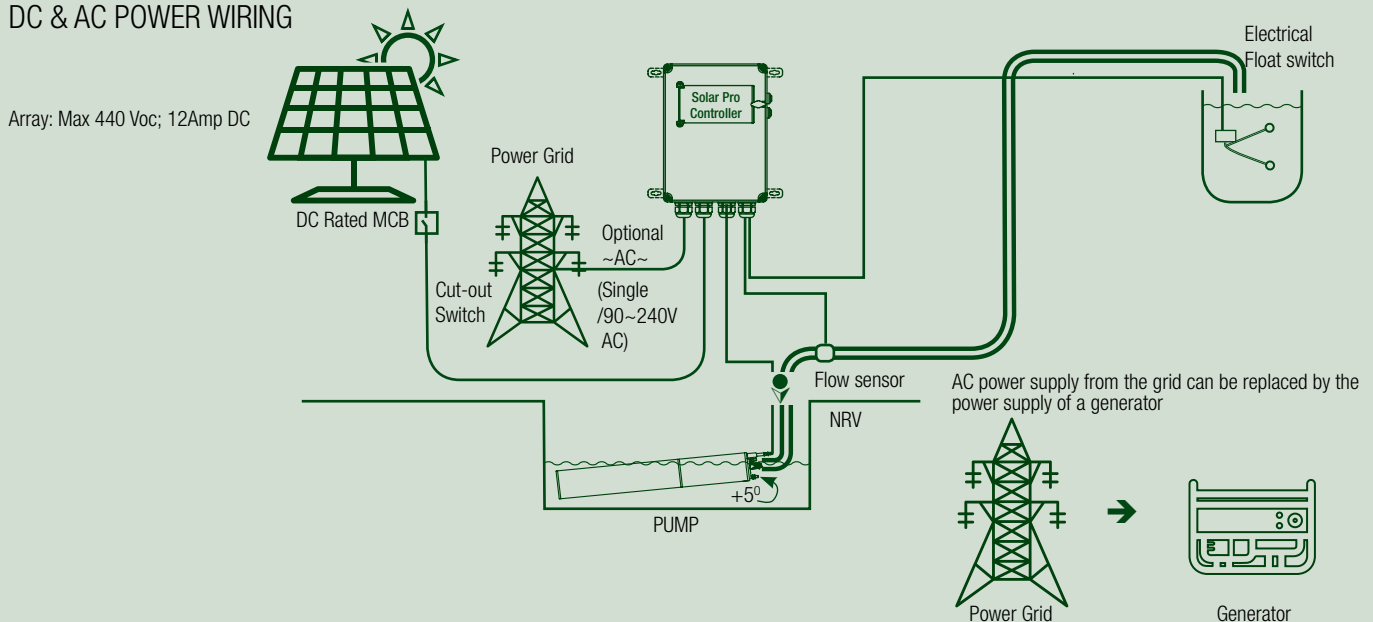
Option 3: System using Flow sensor & NRV

DC & AC POWER WIRING



Horizontal Installation of the System using Electronic float switch, Flow sensor & NRV

DC & AC POWER WIRING

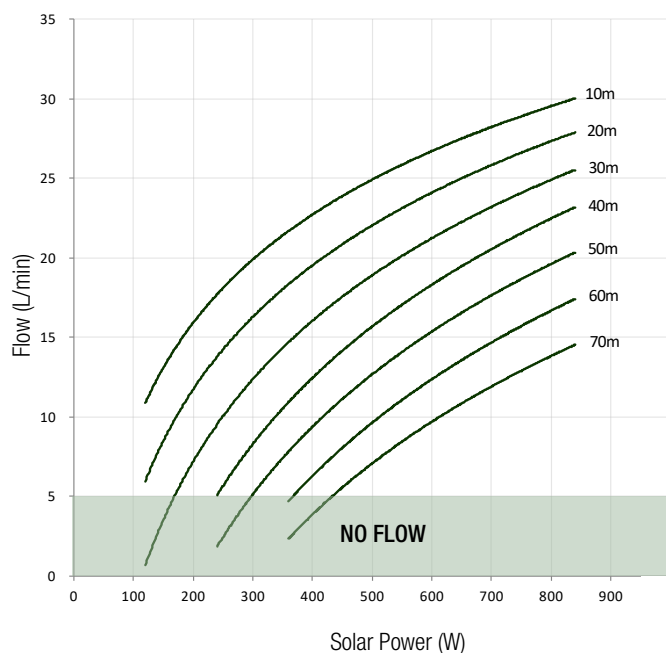


What if it is a Horizontal Installation? (Dam/River)

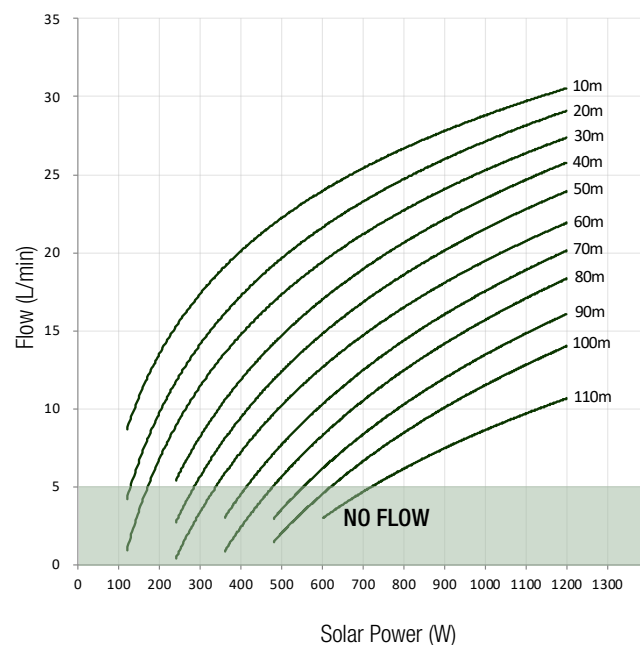
- Same fundamentals as before.
- Minimum angle of install must be greater than 5 degrees.
- A cooling sleeve is recommended.
- Ensure the motor and pump is in clear water, contamination will lead to blockages and higher power consumption.
- When installing horizontally the bleed hole must be at the top to allow hot water to escape and cool water to enter. (Bleed hole is indicated by arrow on the motor casing).

S4-1 SERIES

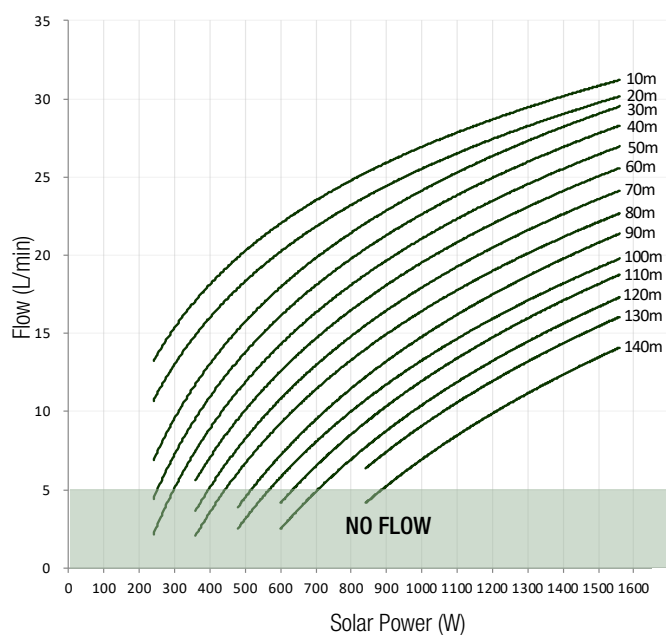
S4-1/13



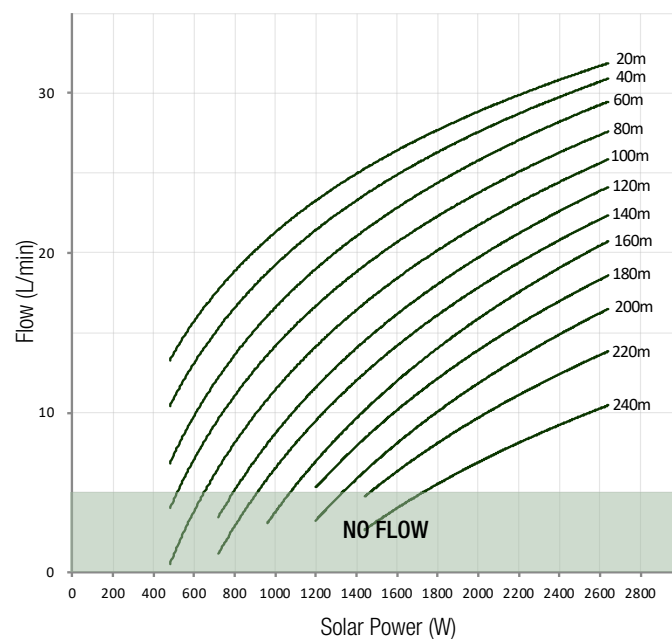
S4-1/19



S4-1/26

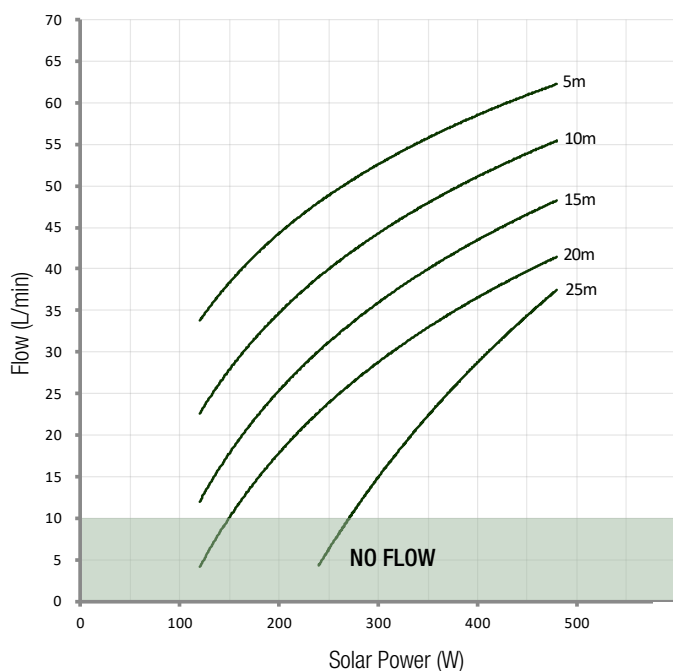


S4-1/37

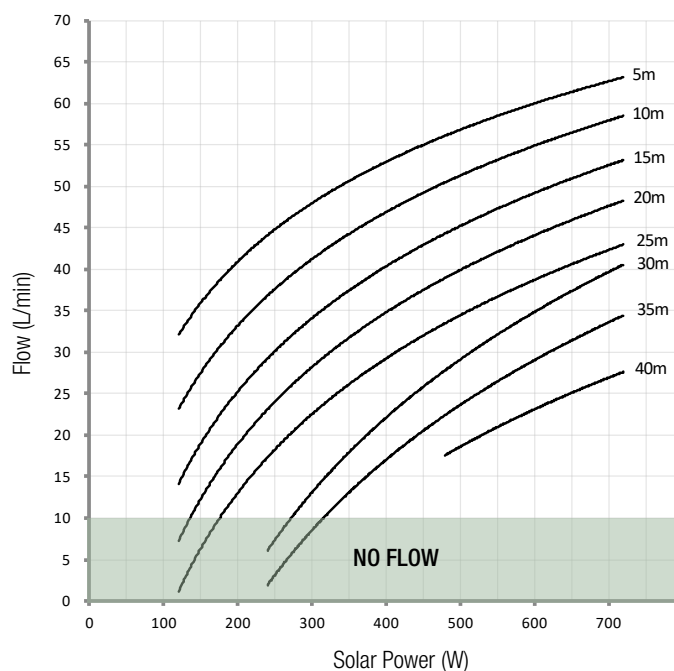


S4-2 SERIES

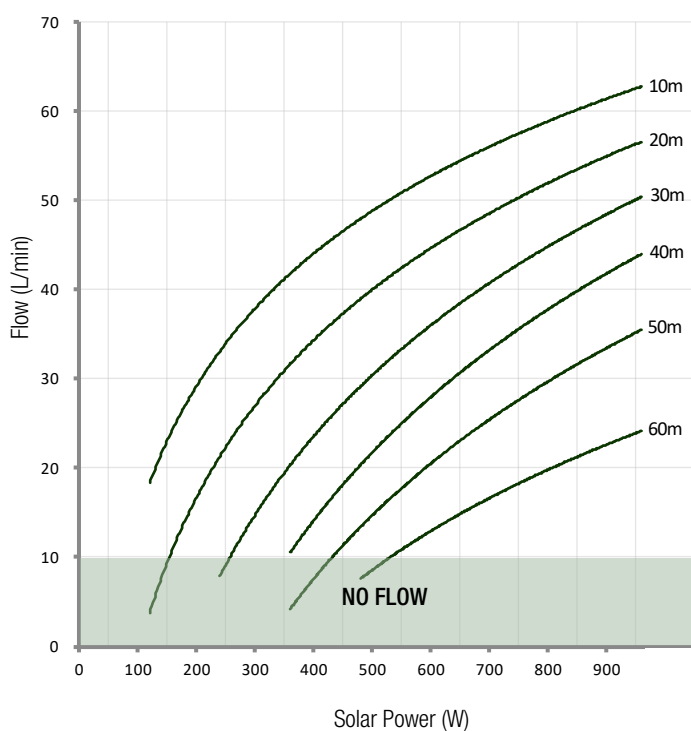
S4-2/5



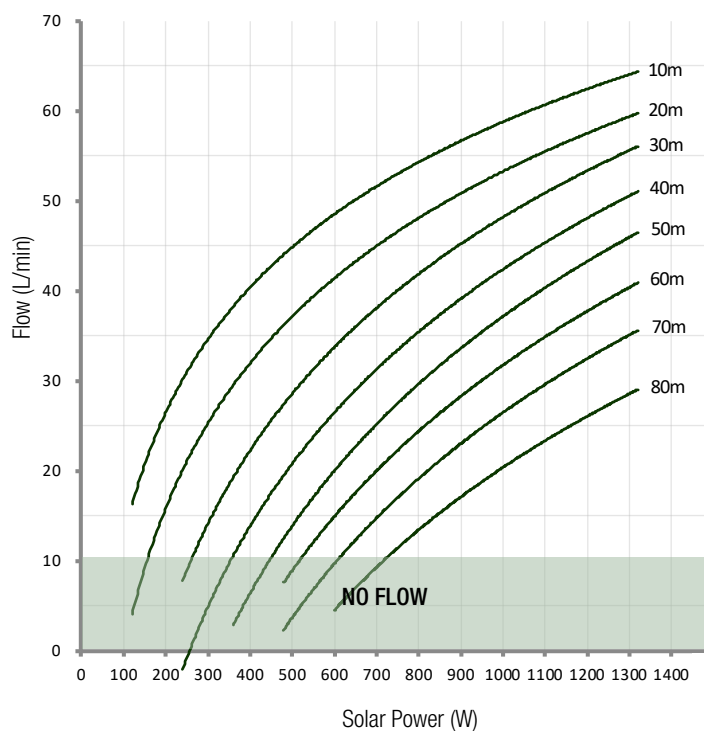
S4-2/7



S4-2/10

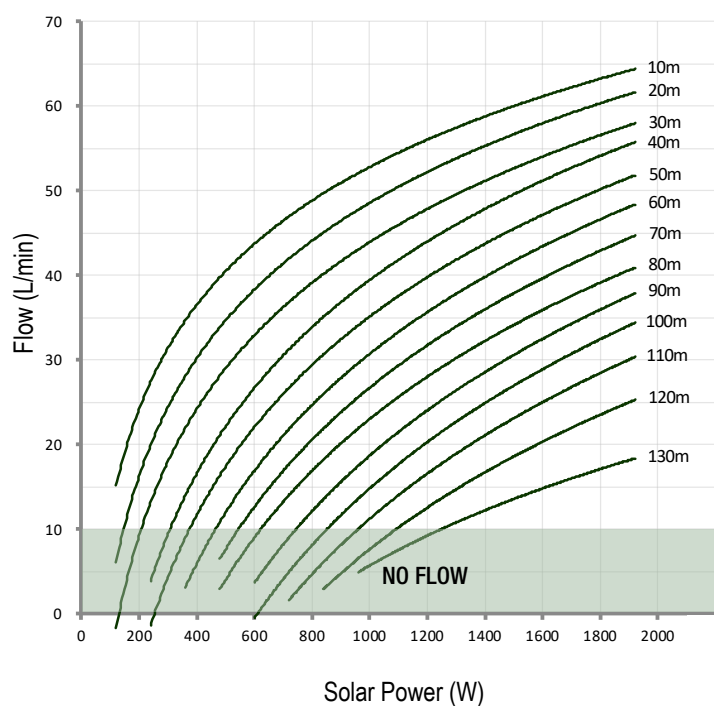


S4-2/14

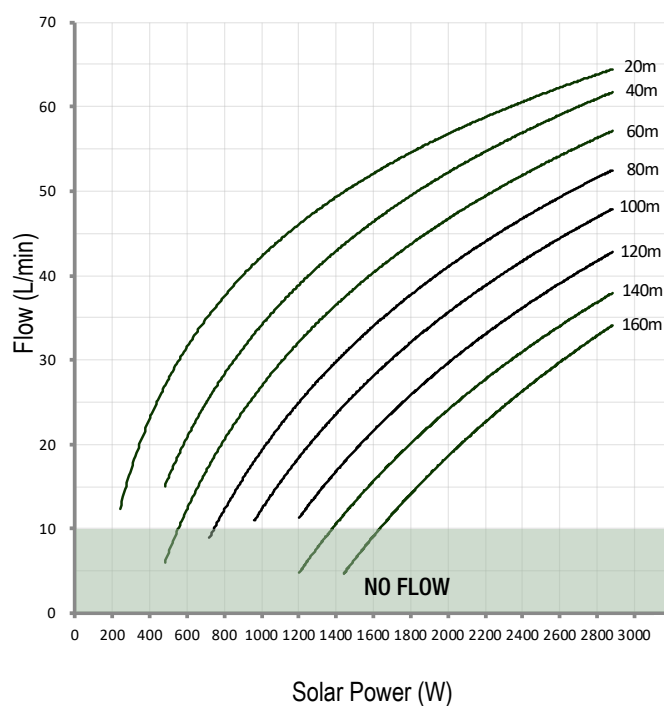


S4-2 SERIES

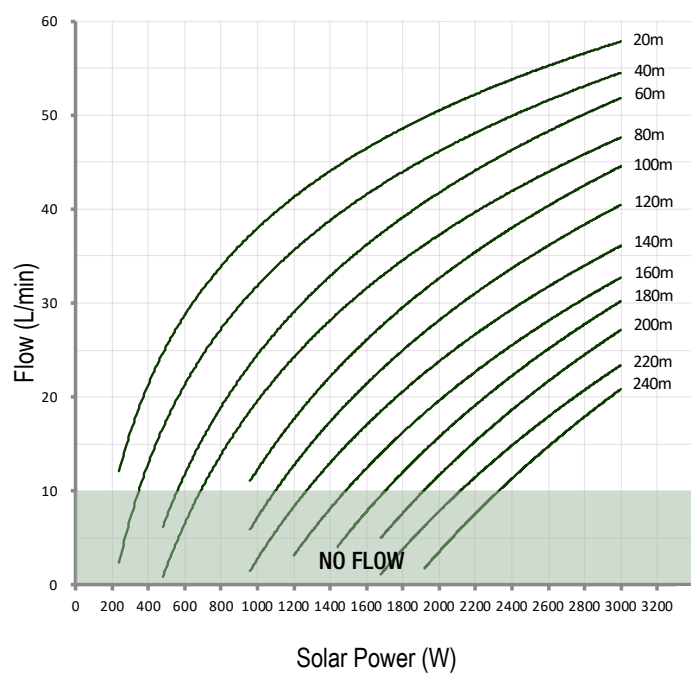
S4-2/20



S4-2/28

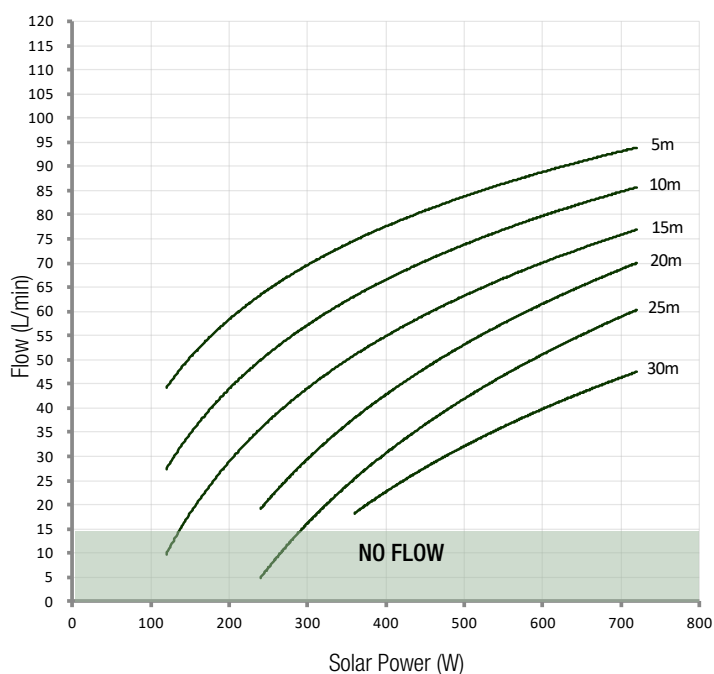


S4-2/40

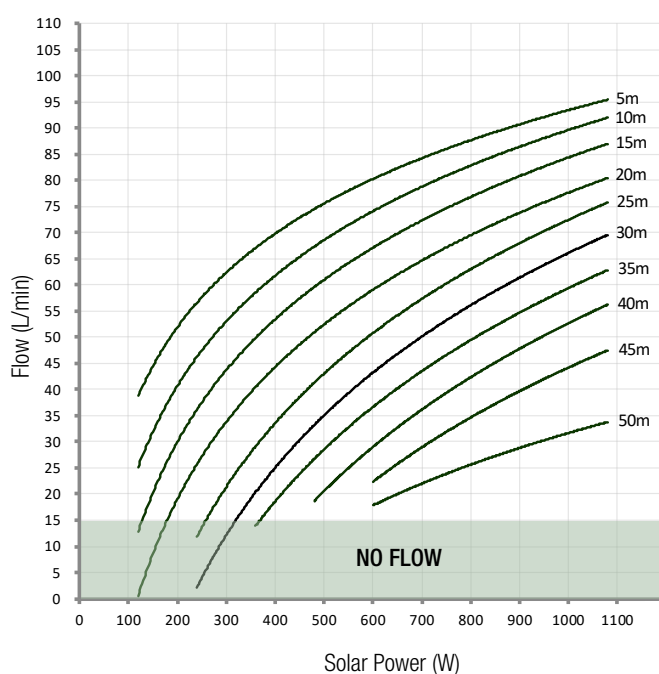


S4-3 SERIES

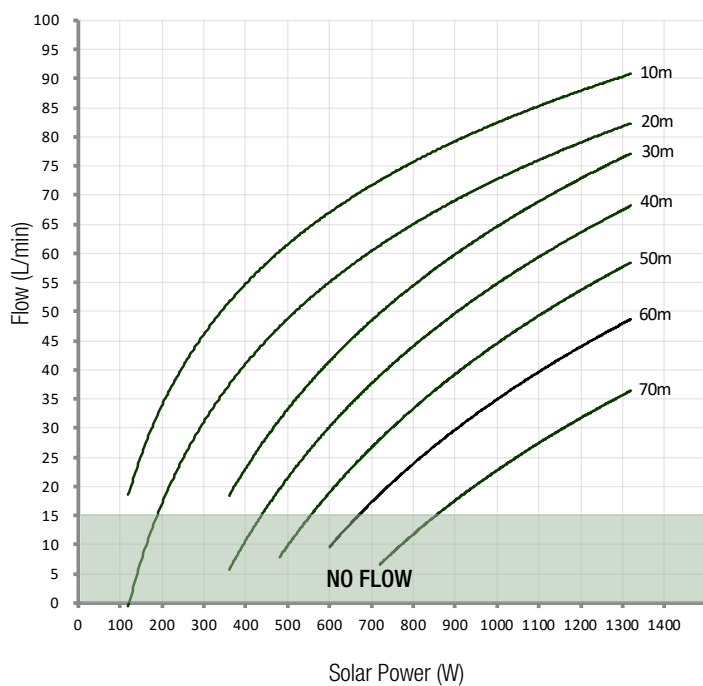
S4-3/6



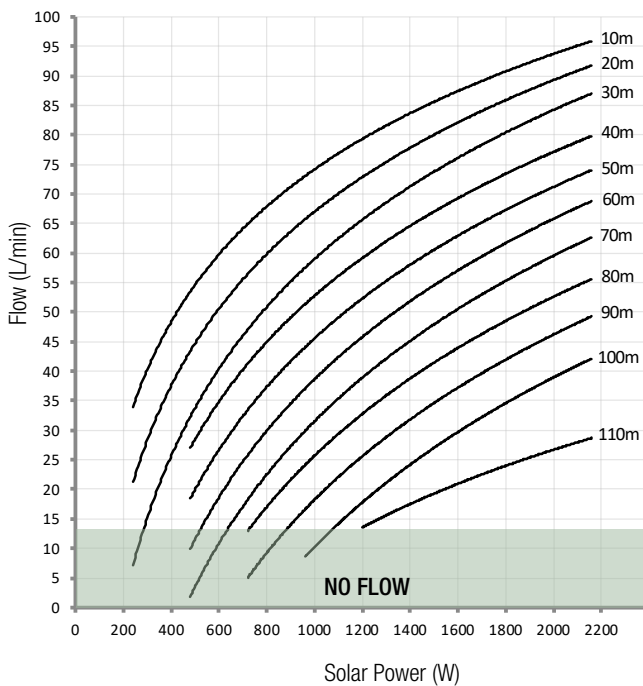
S4-3/9



S4-3/13

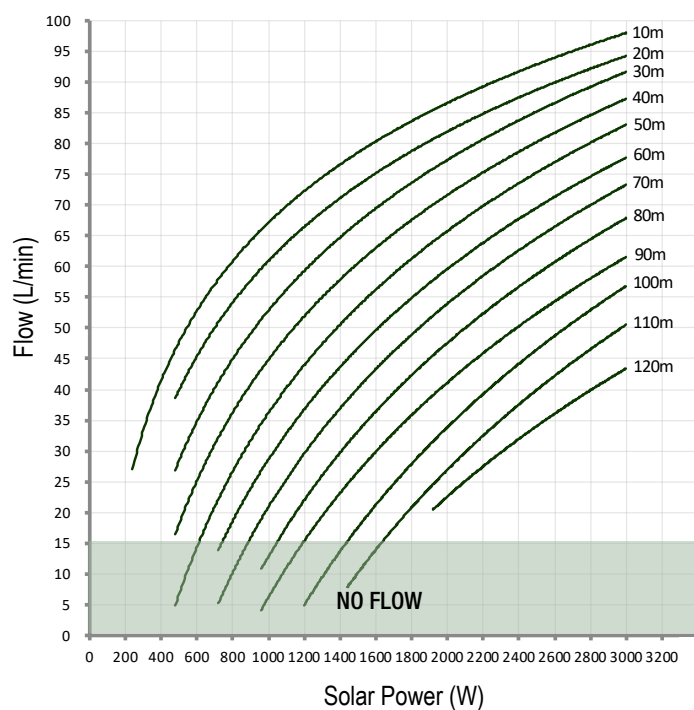


S4-3/19

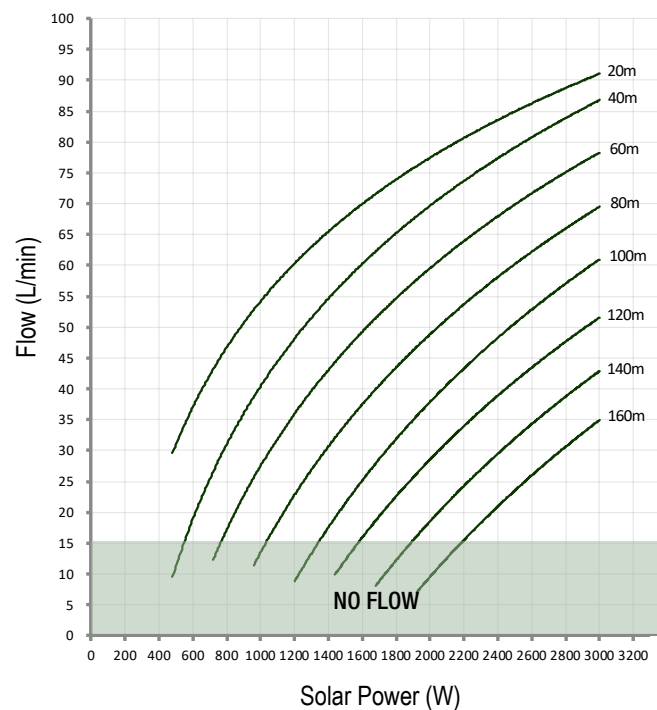


S4-3 SERIES

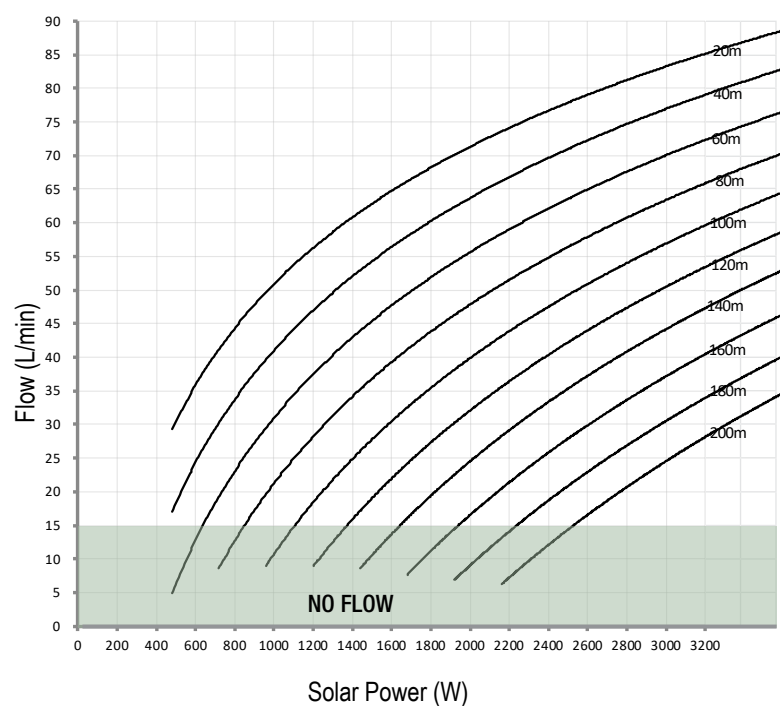
S4-3/25



S4-3/32

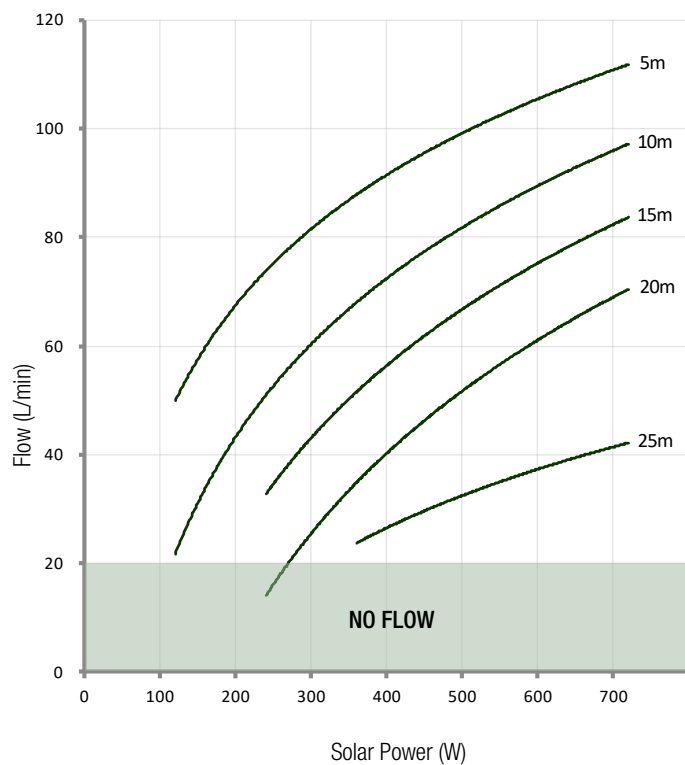


S4-3/39

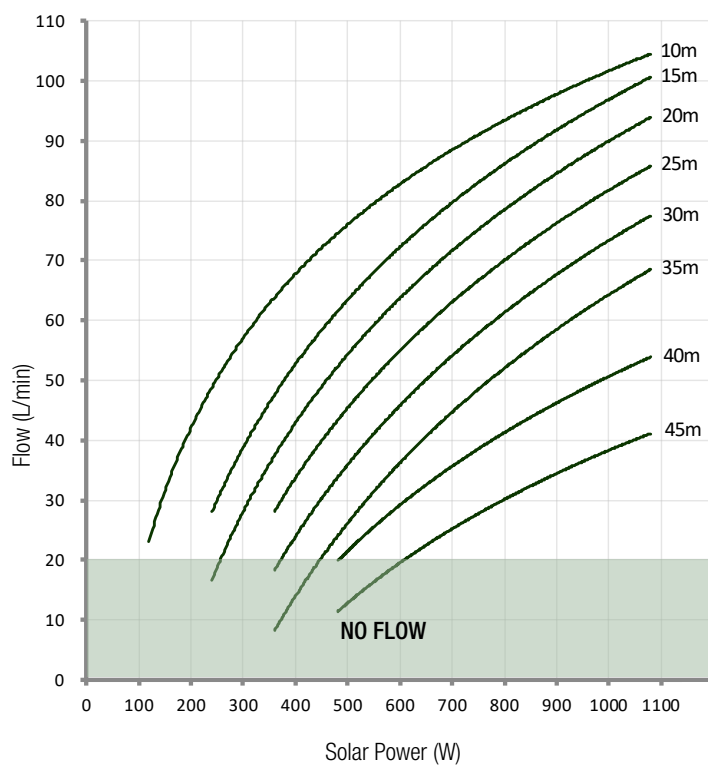


S4-4 SERIES

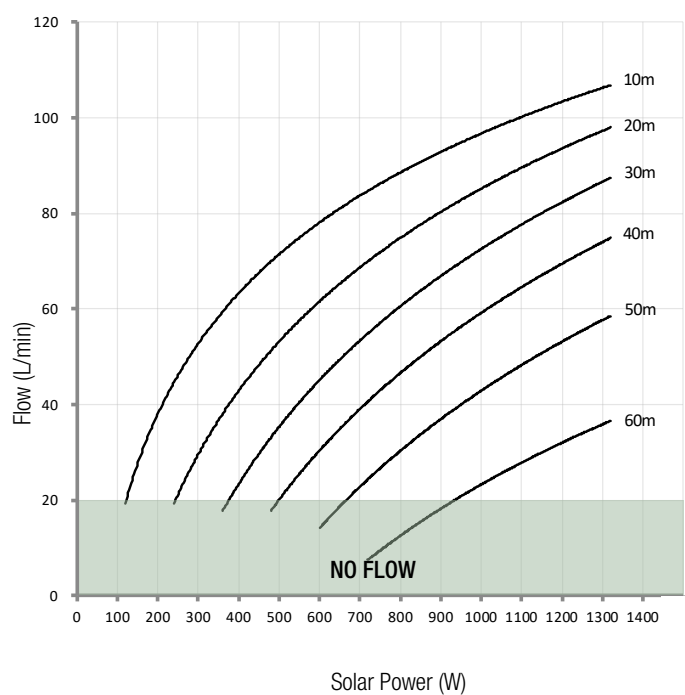
S4-4/4



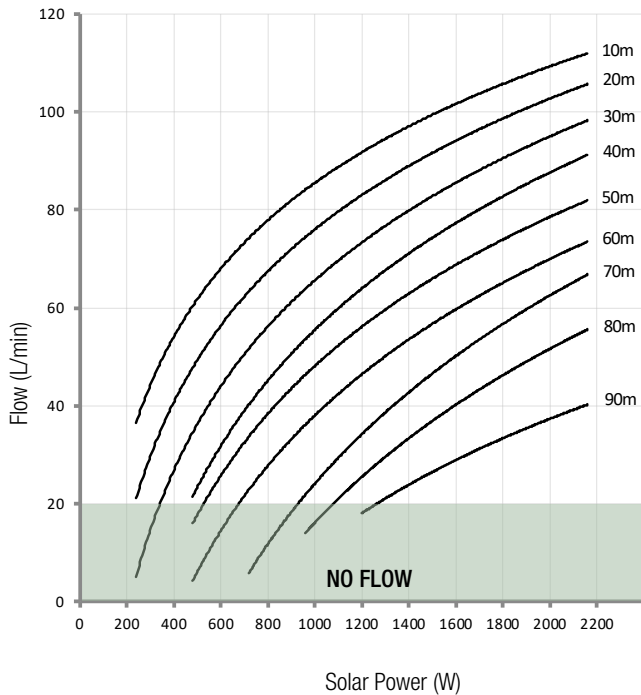
S4-4/7



S4-4/9

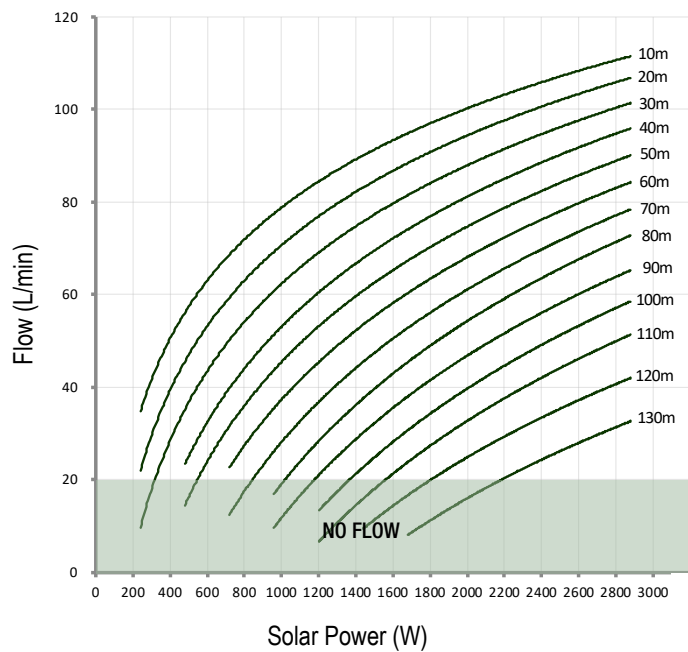


S4-4/14

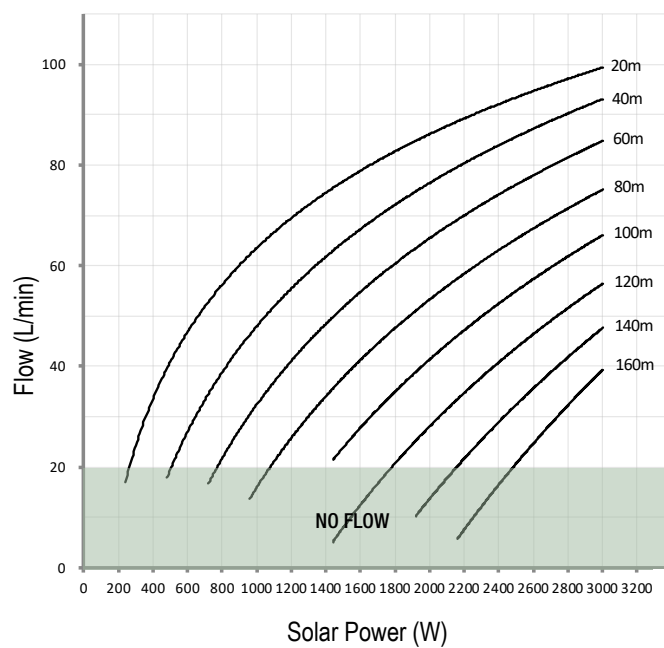


S4-4 SERIES

S4-4/19

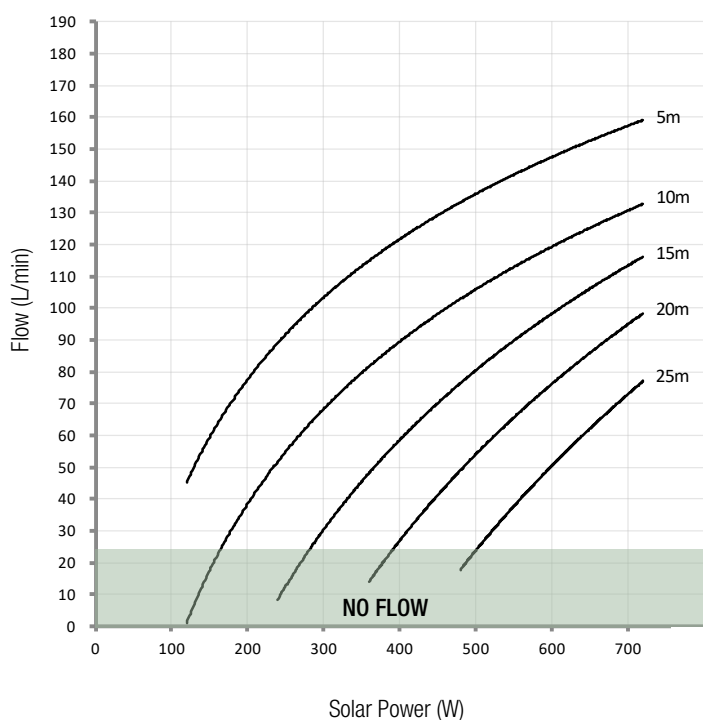


S4-4/27

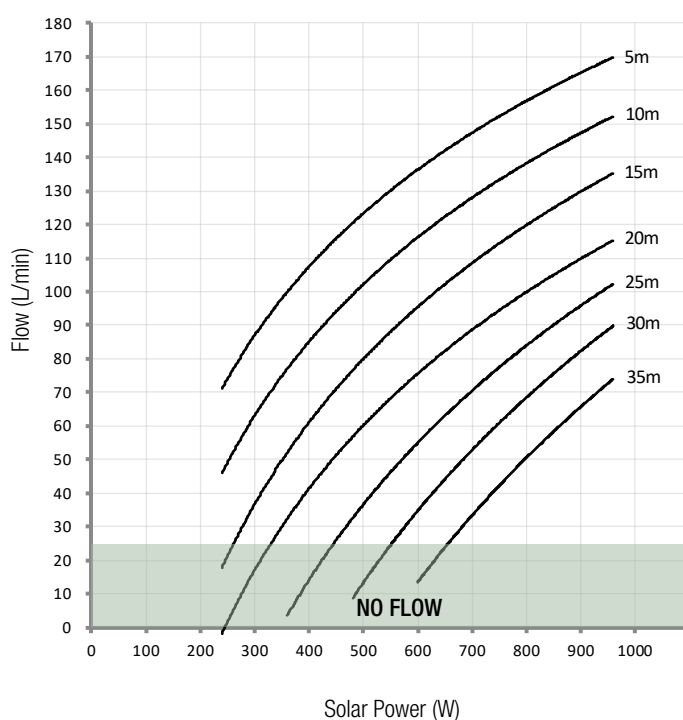


S4-6 SERIES

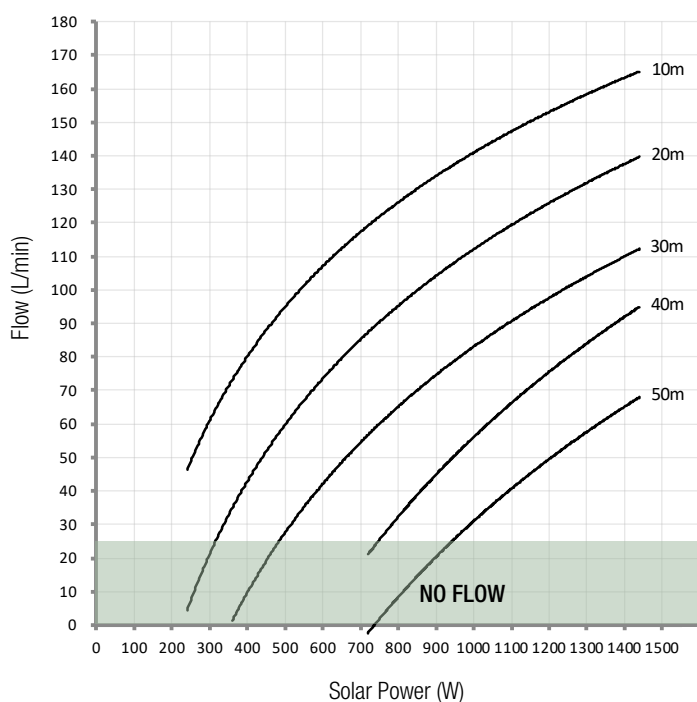
S4-6/5



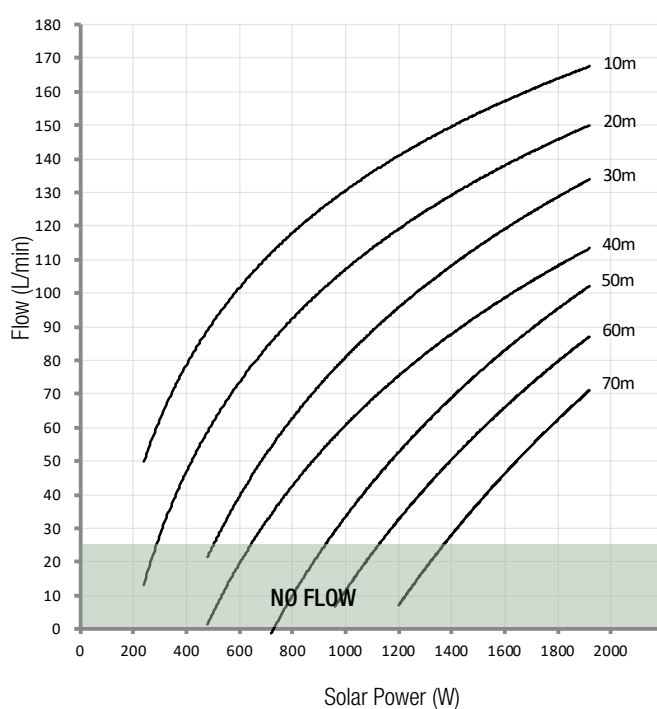
S4-6/7



S4-6/10

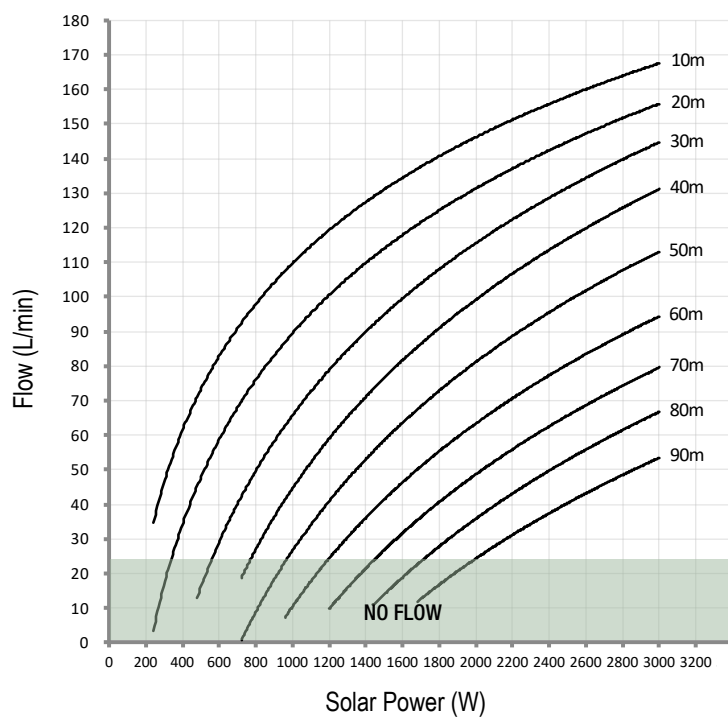


S4-6/14



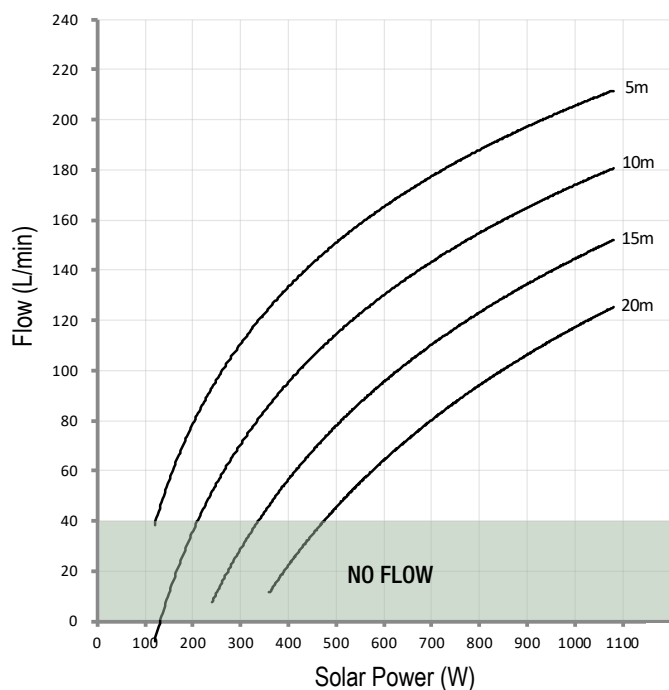
S4-6 SERIES

S4-6/21

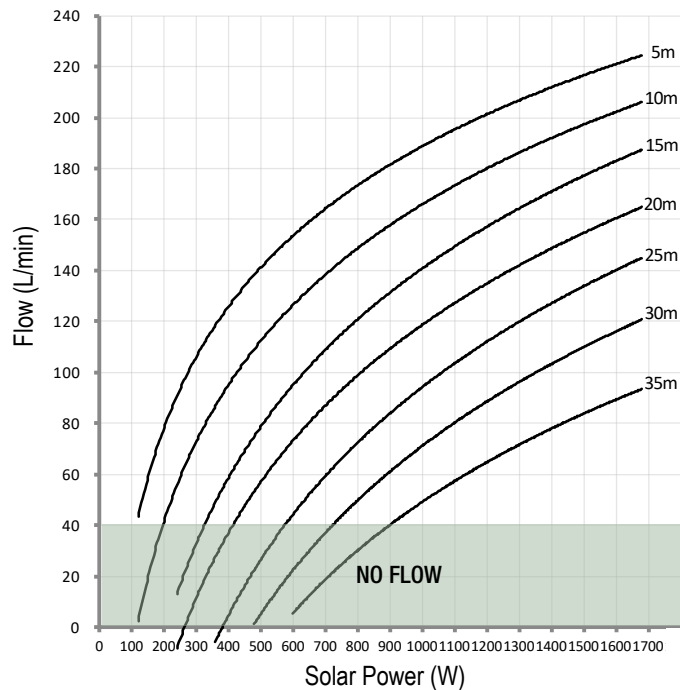


S4-8 SERIES

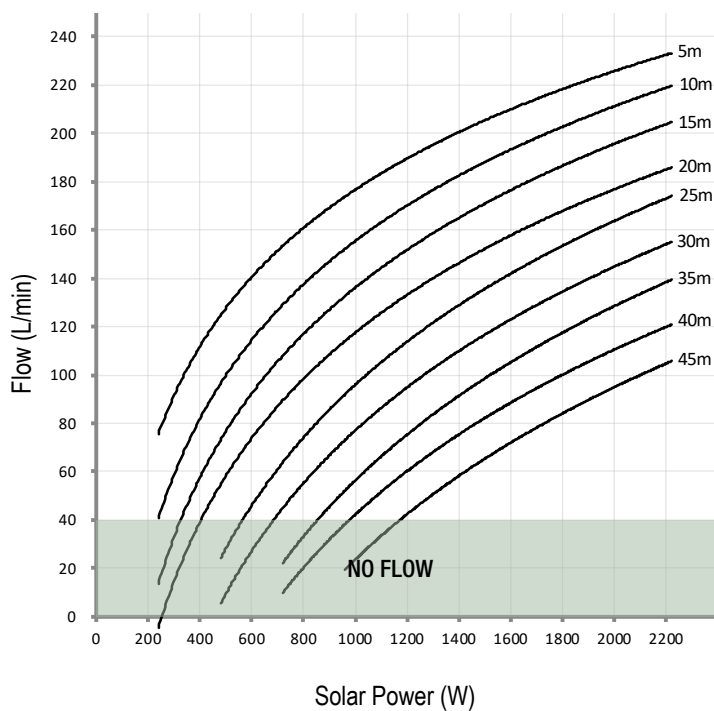
S4-8/4



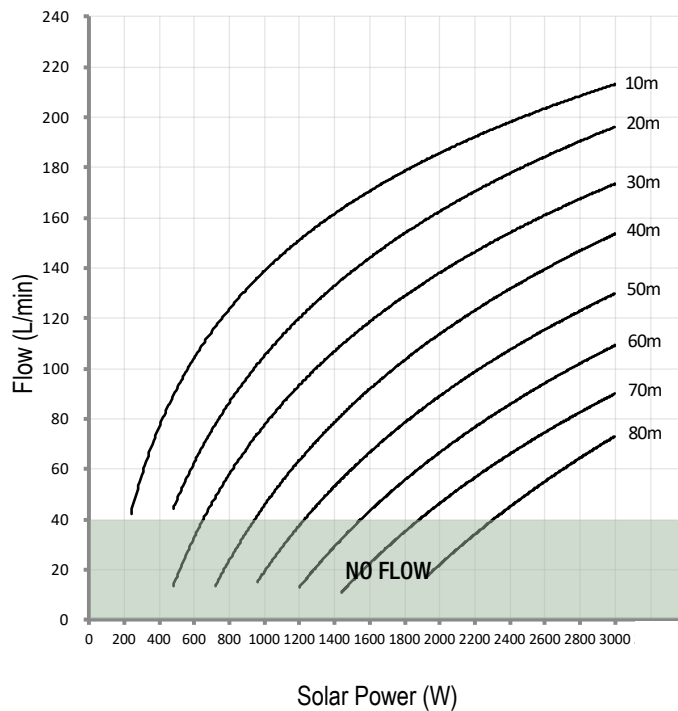
S4-8/6



S4-8/8

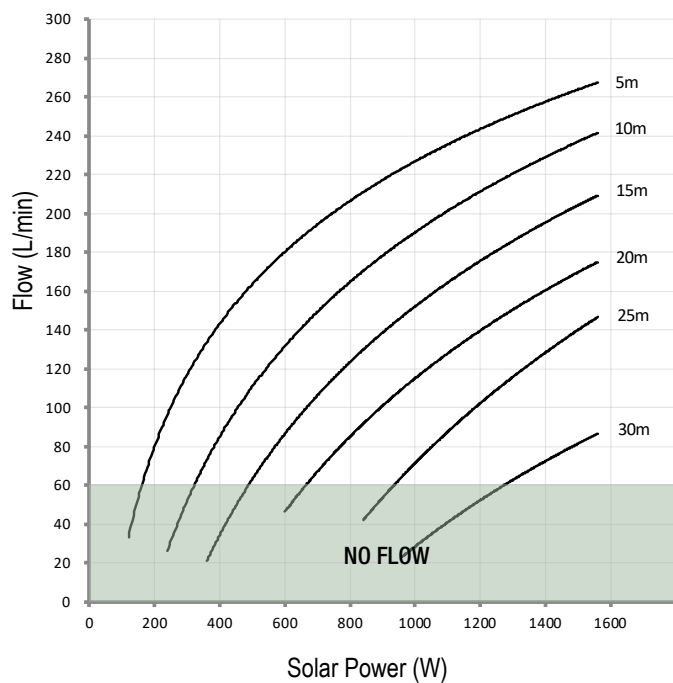


S4-8/13

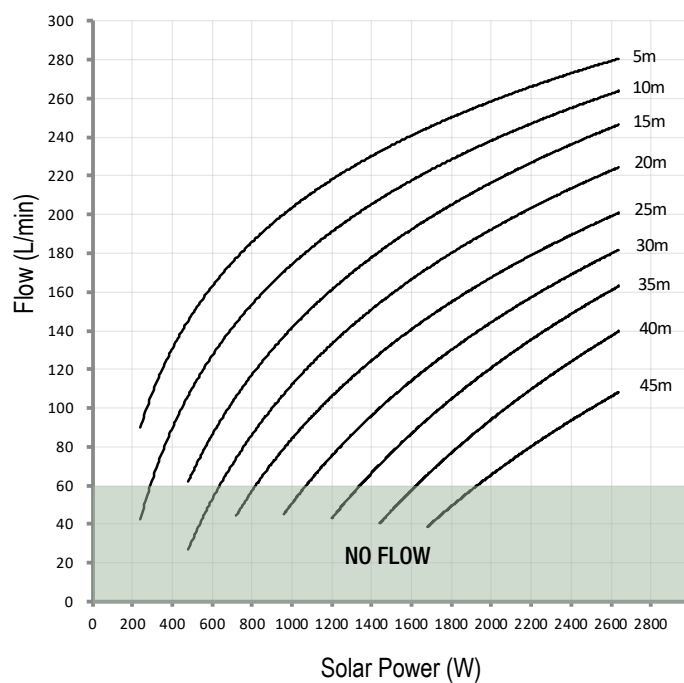


S4-12 SERIES

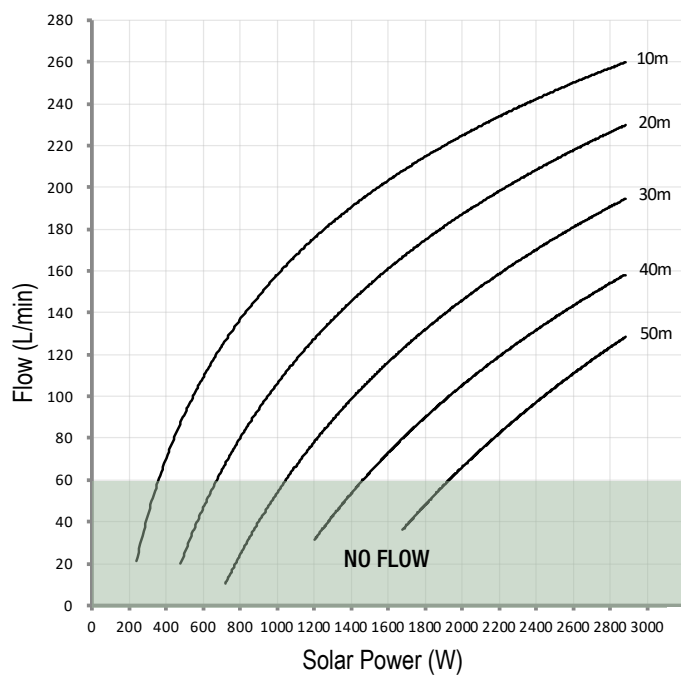
S4-12/5



S4-12/8

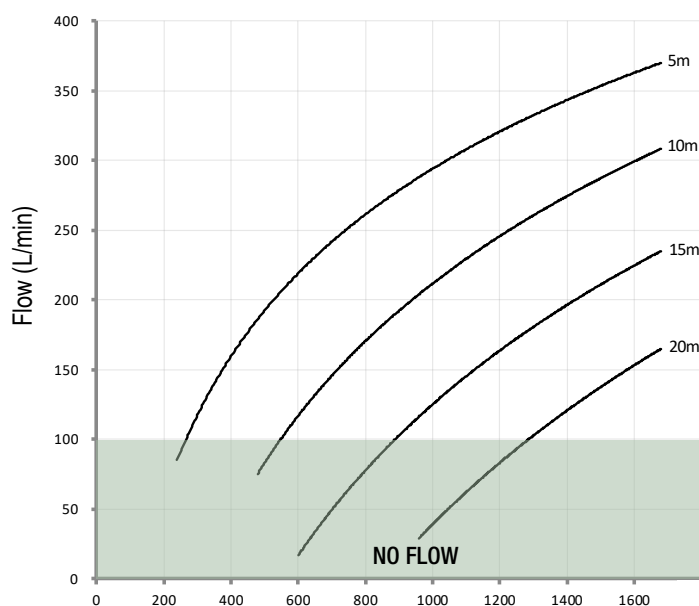


S4-12/11



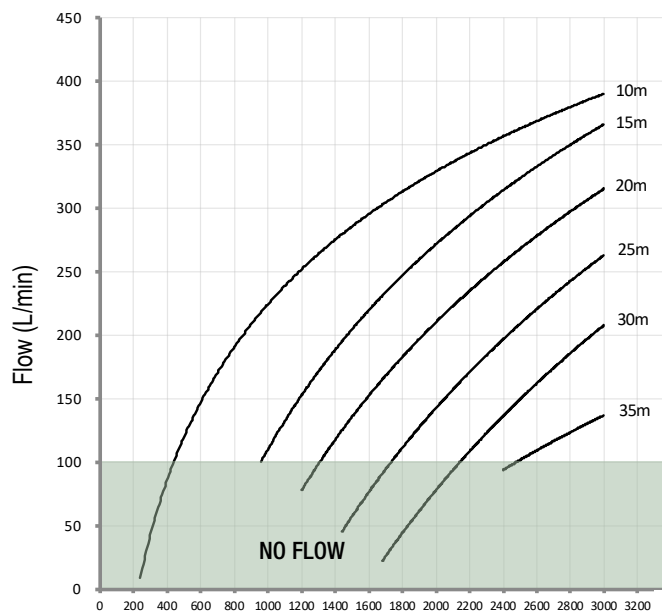
S4-16 SERIES

S4-16/5



Solar Power (W)

S4-16/8



Solar Power (W)

NOTES

NOTES



DAB PUMPS LTD.

Unit 4 and 5, Stortford Hall Industrial Park,
Dunmow Road,
Bishops Stortford,
Herts
CM23 5GZ - UK
salesuk@dwtgroup.com
Tel. +44 1279 652 776
Fax +44 1279 657 727



DAB PUMPS B.V.

Brusselstraat 150
B-1702 Groot-Bijgaarden - Belgium
info.belgium@dwtgroup.com
Tel. +32 2 4668353
Fax +32 2 4669218



DAB PUMPS B.V.

Albert Einsteinweg, 4
5151 DL Drunen - Nederland
info.netherlands@dwtgroup.com
Tel. +31 416 387280
Fax +31 416 387299



DAB PUMPEN DEUTSCHLAND GmbH

Tackweg 11
D - 47918 Tönisvorst - Germany
info.germany@dwtgroup.com
Tel. +49 2151 82136-0
Fax +49 2151 82136-36



DAB PUMPS IBERICA S.L.

Avenida de Castilla nr.1 Local 14
28830 - San Fernando De Henares - Madrid
Spain
info.spain@dwtgroup.com
Tel. +34 91 6569545
Fax: +34 91 6569676



DAB PRODUCTION HUNGARY KFT.

H-8800
Nagykanizsa, Buda Ernő u.5
Hungary
Tel. +36 93501700



DAB PUMPS POLAND Sp. z o.o.

Mokotów Marynarska
ul. Postępu 15C
02-676 Warszawa - Poland
Tel. +48 223 81 6085



DAB UKRAINE Representative Office

Regus Horizon Park
4 M. Hrinchenka St, suit 147
03680 Kiev - Ukraine
Tel. +38 044 391 59 43



000 DWT GROUP

Novgorodskaya str, 1, bld G, office 308
127576 Moscow - Russia
info.russia@dwtgroup.com
Tel. +7 495 122 00 35
Fax +7 495 122 00 36



DAB PUMPS INC.

3226 Benchmark Drive
Ladson, SC 29456 - USA
info.usa@dwtgroup.com
Tel. 1-843-824-6332
Toll Free 1-866-896-4DAB (4322)
Fax 1-843-797-3366



DAB PUMPS SOUTH AFRICA

Twenty One Industrial Estate
16 Purlin Street, Warehouse 4,
Unit B, Olifantsfontein,
South Africa
info.sa@dwtgroup.com
Tel. +27 12 361 3997
Fax +27 12 361 3137



DAB PUMPS CHINA

No.40 Kaituo Road, Qingdao Economic & Technological
Development Zone
Qingdao City, Shandong Province - China
PC: 266500
info.china@dwtgroup.com
Tel. +8653286812030-6270
Fax +8653286812210



DAB PUMPS DE MÉXICO, S.A. DE C.V.

Av Gral Álvaro Obregón 270, oficina 355
Hipódromo, Cuauhtémoc 06100
México, D.F.
Tel. +52 55 6719 0493