S4SUN
SOLAR BOREHOLE SYSTEM



DAB®
WATER•TECHNOLOGY



Sandro Stramare
Chief Executive Officer

WHO IS DAB?

"The added value of DAB has always been knowning when to combine long experience and tradition with the quest for technological innovation".

This challenge has been overcome thanks to the commitment of internal resources and the constant care of client relations.

Because the important thing is to always look at the origins, to never forget where you started.

The simple and effective solutions are the biggest form of innovation. The technology of our products speak the same language of those who buy or use them. This is our strength.

DAB has grown along with its employees and its clients over the years, developing a clear and unambiguous identity and providing a complete 360° service.

We have always invested a lot and we want to continue to do so. In the moments of aggregation with the client, we want to create not only a professional environment, but also a friendly one, forming a team that pursues a common objective.

The relationship with the client is not only essential, but it is also a virtuous model that keeps and maintains solid human relationships.

Because when you choose a DAB, you also choose the company, its continued support, communication and cooperation to achieve total client satisfaction.

RESIDENTIAL BUILDING SERVICE

DAB produces reliable products, technologically advanced, easy to install and efficient, ensuring high energy savings in the following domestic and residential application sectors: heating and air conditioning, water supply and pressurization, irrigation and gardening, use of rain water, drainage, collection and disposal of waste water, circulation and filtration of swimming pool water.





COMMERCIAL BUILDING SERVICE

DAB develops technologically advanced solutions, highly efficient and reliable for many commercial application sectors: from heating and air condition circulation systems, to water supply and fire fighting system pressurization, to the disposal of wastewater.

AGRICULTURE AND IRRIGATION

DAB offers pumping solutions for extraction of water from the subsoil for agricultural and irrigation applications. High quality submersible pumps and motors, reliable and capable of guaranteeing high energy efficiency. A wide range of products to meet the needs of any type of plant



SUBMERSIBLE SOLAR MOTOR

M220SOL / M220SOL-H



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 with cooling sleeve
Max input limit:
DC: 55 – 440Voc; 12A
90 – 440Voc; 12A (H version)
AC: 90 – 280V; 10A
Max power output (P2): 2200W
Max speed: 3000rpm
Max water temp: 40°C
Min water temp: 0°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 S4SUN is designed for ease of use, requiring no maintenance and is coupled exclusively with the DAB S4 pump to supply water using solar energy.
  *Warranty will be voided if the Solar Motor is not paired with a DAB S4 pump.
- 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 losses 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 mandatory that every solar motor is installed with a DAB solar controller to use with multiple control inputs and power supplies (AC/DC).
- Dry run protection (No water in the borehole):
  The motor is equipped with dry run protection provided that it is installed with a solar motor controller and flow sensor.
- Pump operation with zero flow condition with flow sensor installed (It is mandatory to install a flow sensor):
  With the flow sensor (accessory) in operation, the sensor will relay the zero flow information to the controller and after 3 minutes the motor will shut down unless flow resumes.
- Pump operation with bore level probe:
  When the water level drops below the level of the probe the pump will turn off, once the water level is above the probe the motor will start again after a period of 10mins. The bore level probe can be connected to the WWL normally open input.

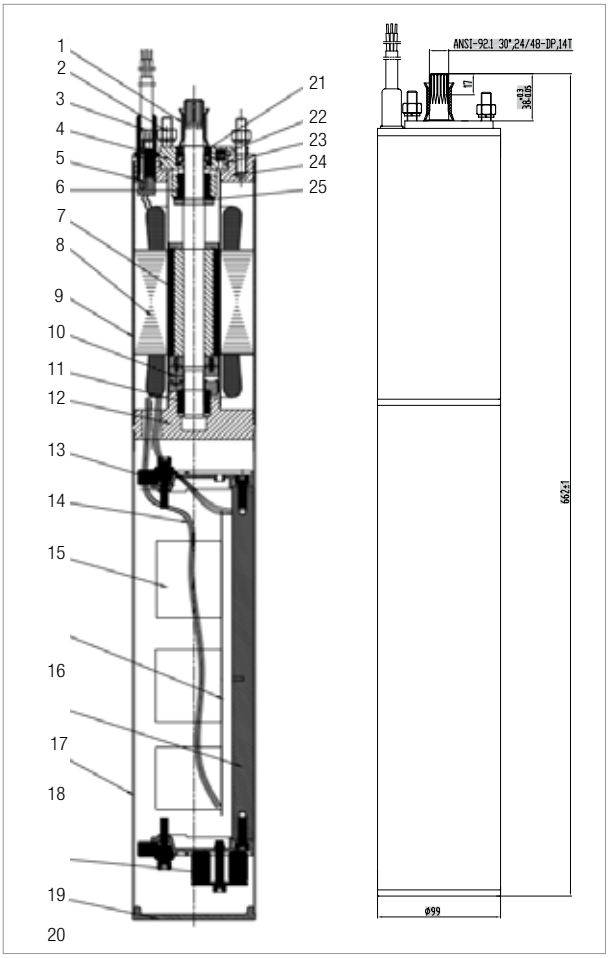
ELECTRICAL DATA							
MOTOR TYPE	**AC V**	**DC V**	**P2 kW**	**In AC A**	**In DC A**	**DC MAX W**	**RPM**
MOTOR M220SOL	90-280	55-440	2,2	10	12	3000	3000
MOTOR M220SOL-H	90-280	90-440	2,2	10	12	3000	3000

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

SUBMERSIBLE SOLAR MOTOR

M220SOL / M220SOL-H

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	Resin Filled 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	Polytetrafluroethylene

SOLAR MOTOR CONTROLLER

M220CON





General Data

The M220CON controller is a microcontroller, designed, developed and manufactured for the S4SUN.
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 in AUTO mode and DC power source is below minimum 55V (M220)or 90V (M220-H) the device shuts down the DC supply and switches to AC power (if available) after counting down 120 seconds. When DC power is restored it will automatically switch back after counting down another 120 seconds. The 120 seconds timer allows for capacitors in the motor to discharge before safely switching between power sources.

Features

- The M220CON controller is capable to receive 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:

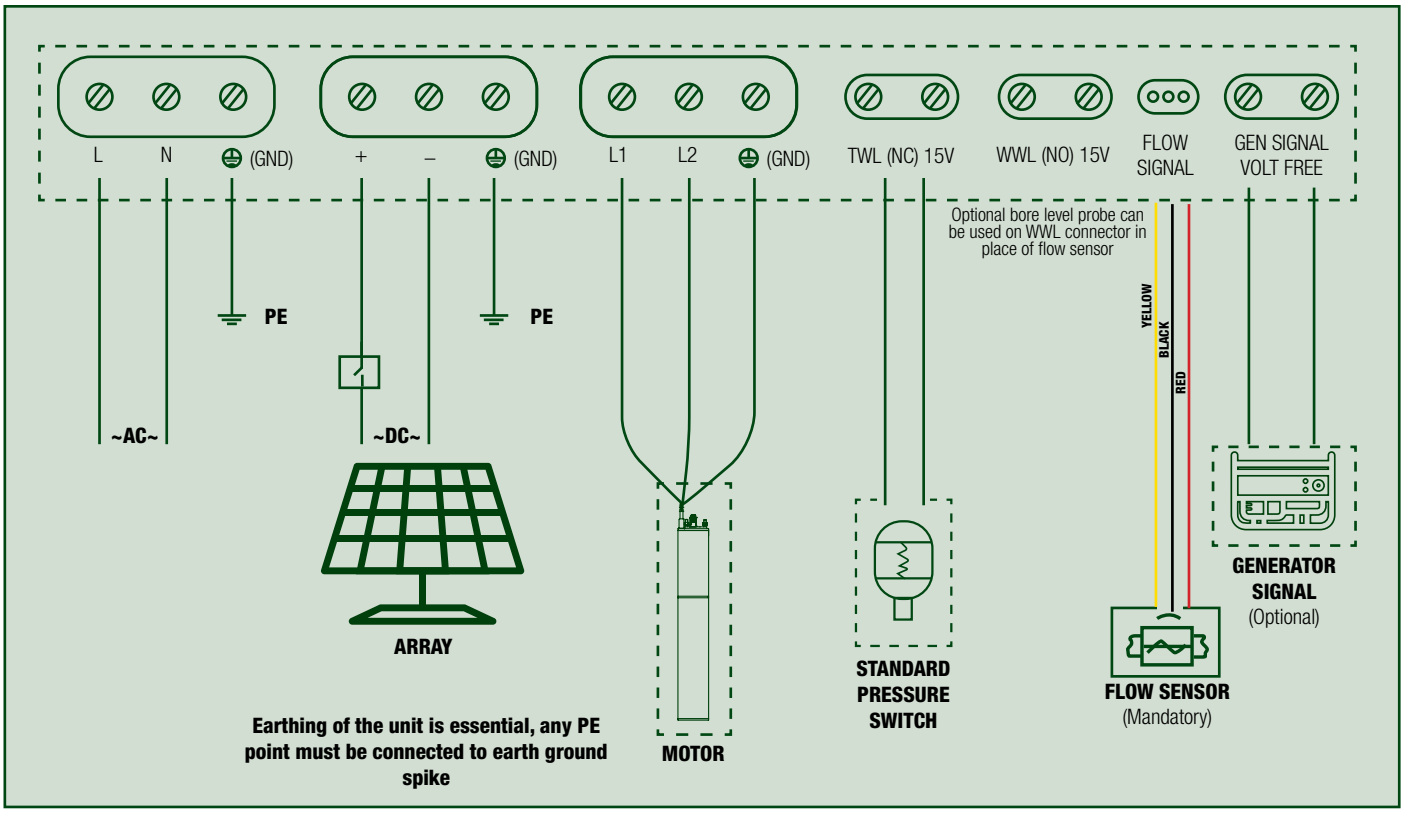
- Adjust restart delay after no flow, ideal for low yielding water source applications.
- Once zero flow is detected the control will maintain operation for 3 minutes then turn off the pump.
- There is a two minute lock out cycle when power is supplied to the controller.

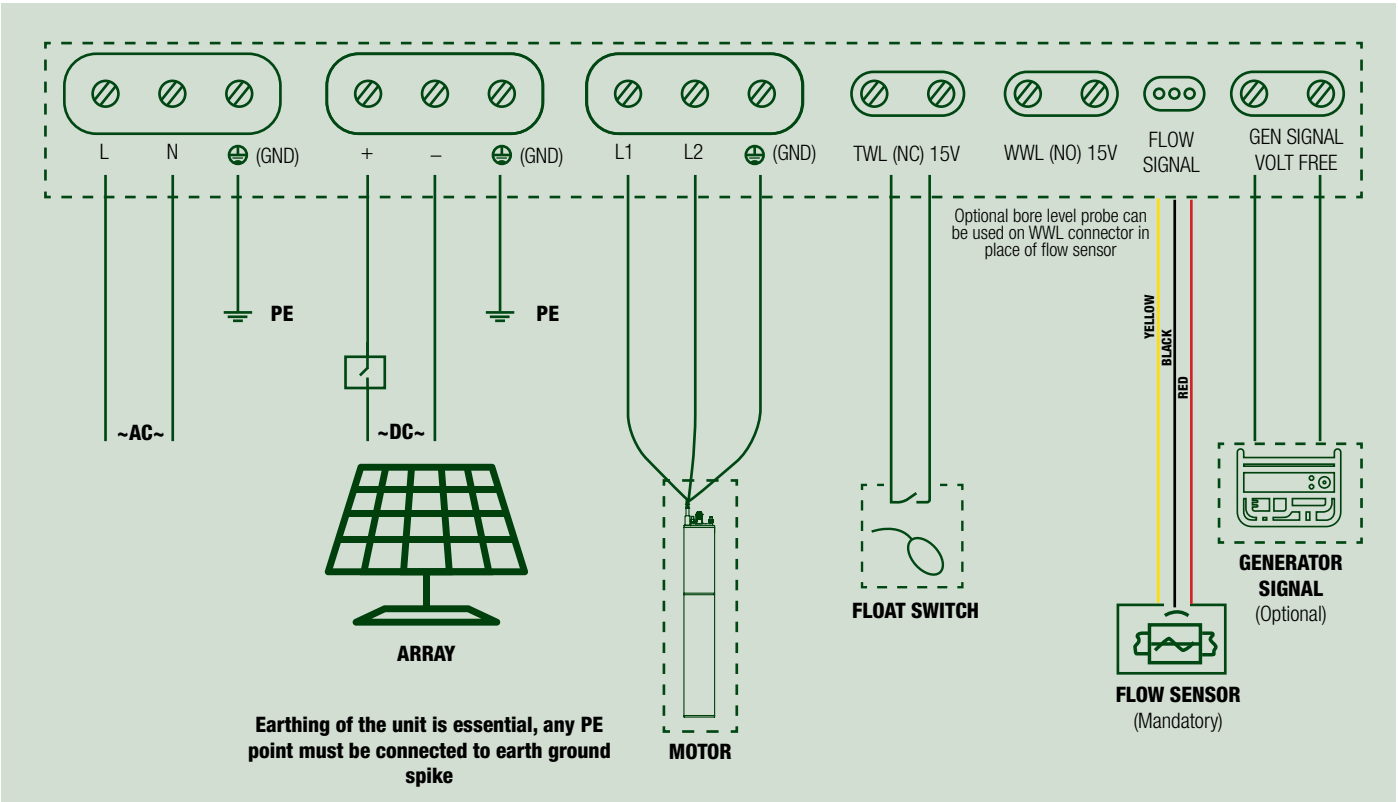
Sizing of generator:

- Total Watt of the solar array, multiplied by 1.1 and then devided by 0.8 to arrive at the minimum kVA required from the generator.

SOLAR MOTOR CONTROLLER

WIRING DIAGRAM





ACCESSORIES

Flow Sensor	Item Desc	Specification
	**Flow sensor 2“**	Inlet & outlet diameter: 2” Flow range: 10-300 l/min Working voltage: 3-24V Pulse characteristic: F=0.2*Q Pressure range =>2.0MPA (To be used with waterproof cable)
Zinc Anode	**Item Desc**	**Specification**
	**Zinc anode**	50mm clamp on anode

Waterproof cable	Item Desc	Specification
	**Flow sensor cable**	10 meters waperproof cable to connect to flow sensor with waterproof connectors

CABLE SELECTION

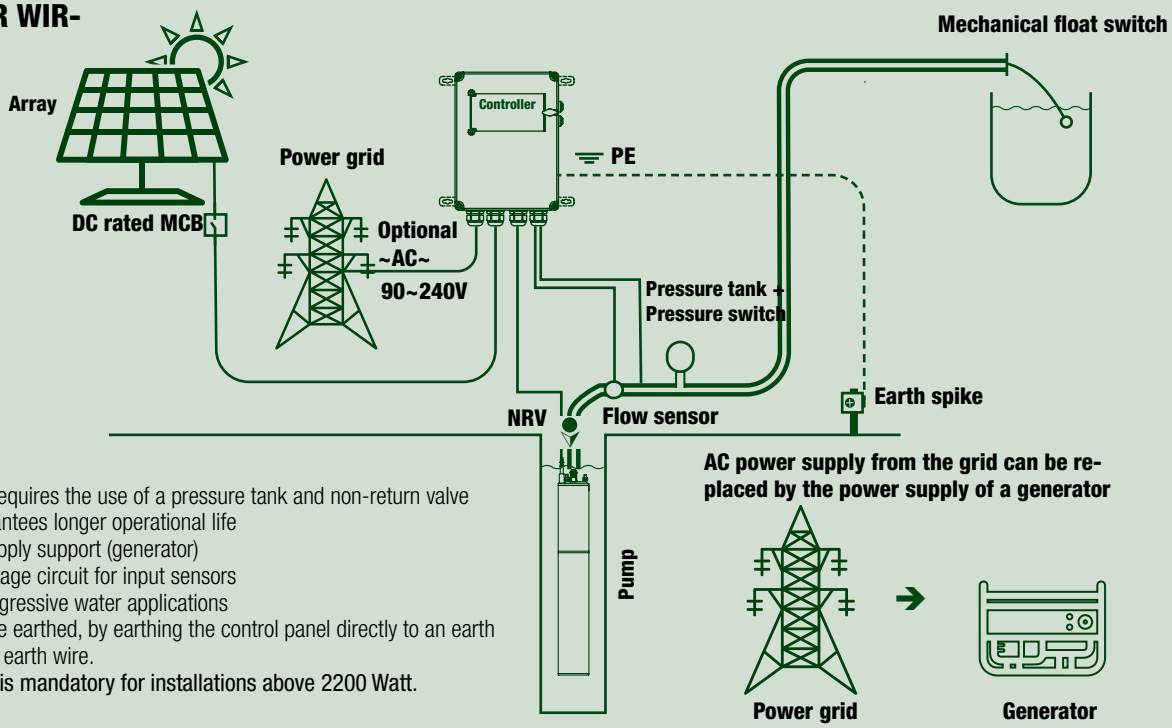
			Cable Length H (Up to ‘X’ Meters)									
Solar Panel Input			**10**	**25**	**50**	**75**	**100**	**125**	**150**	**200**	**250**	**300**
DC Input Power (W)	**VMPP (V)**	**IMPP (A)**	**Cross Section mm²**									
600	60	10	2,5	6	10	16	25	25	25	35	50	50
700	70	10	1,5	4	10	16	16	25	25	35	50	50
800	80	10	1,5	4	10	10	16	16	25	25	35	50
900	90	10	1,5	4	6	10	16	16	25	25	35	35
1000	100	10	1,5	2,5	6	10	10	16	16	25	25	35
1100	110	10	1,5	2,5	6	10	10	16	16	25	25	35
1200	120	10	1,5	2,5	6	10	10	16	16	25	25	25
1300	130	10	1,5	2,5	4	6	10	10	16	16	25	25
1400	140	10	1,5	2,5	4	6	10	10	16	16	25	25
1500	150	10	1,5	2,5	4	6	10	10	10	16	25	25
1600	160	10	1,5	2,5	4	6	10	10	10	16	16	25
1700	170	10	1,5	1,5	4	6	6	10	10	16	16	25
1800	180	10	1,5	1,5	4	6	6	10	10	16	16	25
1900	190	10	1,5	1,5	4	4	6	10	10	16	16	16
2000	200	10	1,5	1,5	2,5	4	6	10	10	10	16	16
2100	210	10	1,5	1,5	2,5	4	6	6	10	10	16	16
2200	220	10	1,5	1,5	2,5	4	6	6	10	10	16	16
2300	230	10	1,5	1,5	2,5	4	6	6	10	10	16	16
2400	240	10	1,5	1,5	2,5	4	6	6	10	10	16	16
2500	250	10	1,5	1,5	2,5	4	4	6	6	10	10	16
2600	260	10	1,5	1,5	2,5	4	4	6	6	10	10	16
2700	270	10	1,5	1,5	2,5	4	4	6	6	10	10	16
2800	280	10	1,5	1,5	2,5	4	4	6	6	10	10	16
2900	290	10	1,5	1,5	2,5	4	4	6	6	10	10	16
3000	300	10	1,5	1,5	2,5	2,5	4	6	6	10	10	10
3100	310	10	1,5	1,5	2,5	2,5	4	6	6	10	10	10

INSTALLATION GUIDE

BEST PRACTICE

Option 1: System using mechanical float switch, pressure switch, pressure tank, flow sensor & NRV

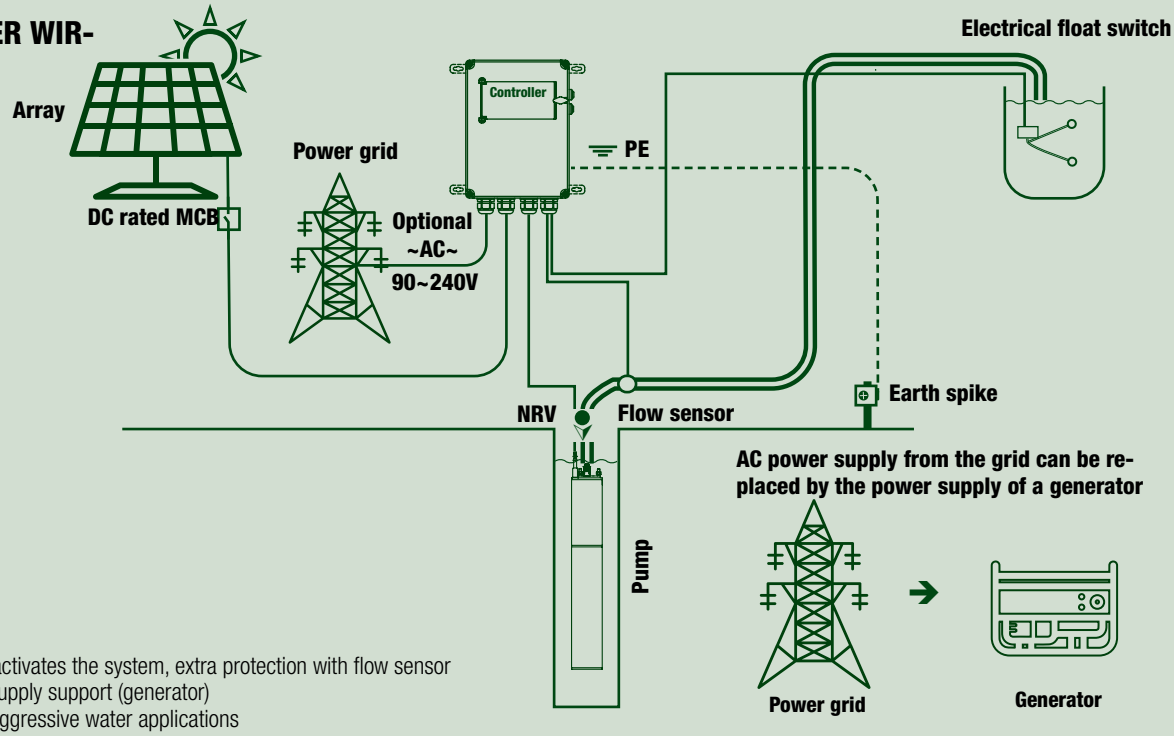
DC & AC POWER WIRING



- Pressure switch requires the use of a pressure tank and non-return valve
- The system guarantees longer operational life
- Backup power supply support (generator)
- Complete low voltage circuit for input sensors
- Zinc anode for aggressive water applications
- The unit should be earthed, by earthing the control panel directly to an earth spike through the earth wire.
- A cooling sleeve is mandatory for installations above 2200 Watt.

Option 2: System using electronic float switch, flow sensor & NRV

DC & AC POWER WIRING



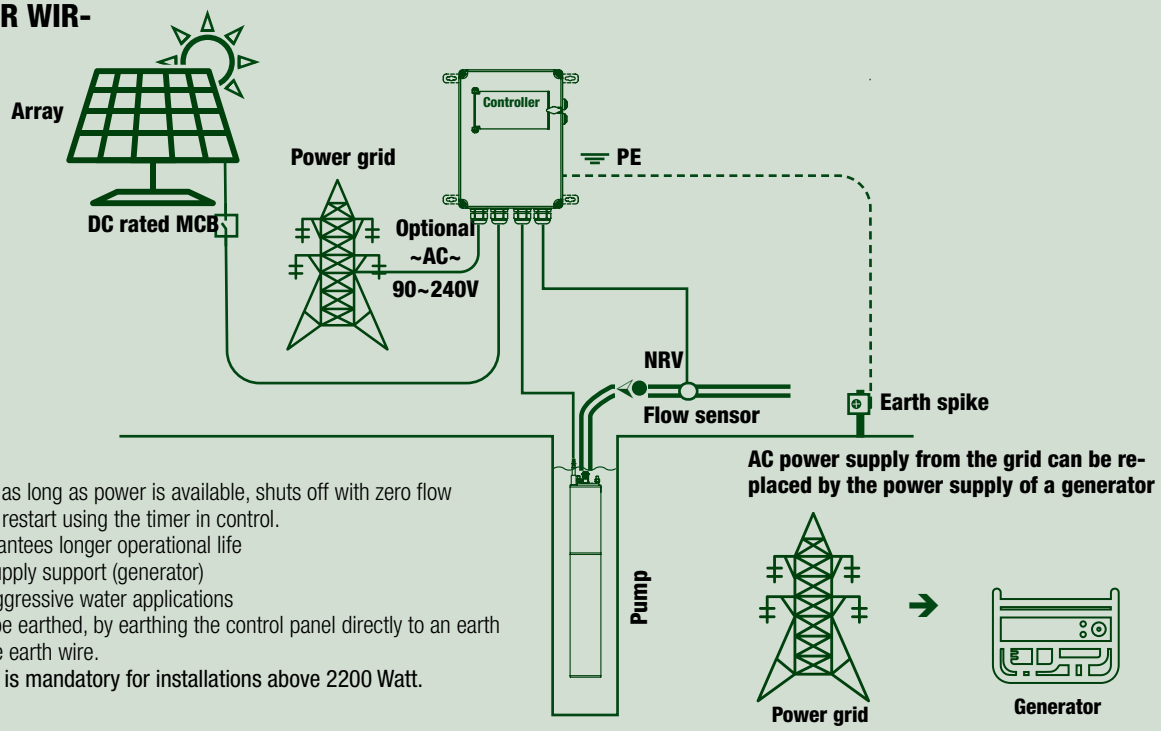
- Electronic float activates the system, extra protection with flow sensor
- Backup power supply support (generator)
- Zinc anode for aggressive water applications
- The unit should be earthed, by earthing the control panel directly to an earth spike through the earth wire.
- A cooling sleeve is mandatory for installations above 2200 Watt.

INSTALLATION GUIDE

BEST PRACTICE

Option 3: System using flow sensor & NRV

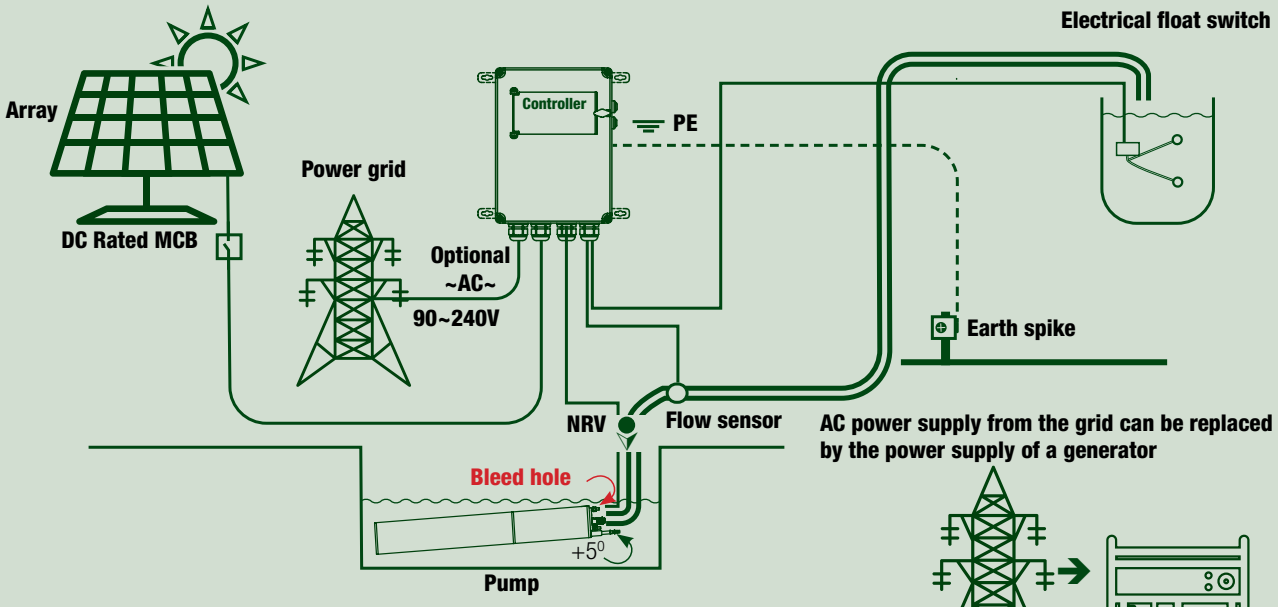
DC & AC POWER WIRING



- The system runs as long as power is available, shuts off with zero flow and continues to restart using the timer in control.
- The system guarantees longer operational life
- Backup power supply support (generator)
- Zinc anode for aggressive water applications
- The unit should be earthed, by earthing the control panel directly to an earth spike through the earth wire.
- A cooling sleeve is mandatory for installations above 2200 Watt.

Horizontal installation of the system using electronic float switch, flow sensor & NRV

DC & AC POWER WIRING



- **A cooling sleeve is mandatory and the minimum angle of installation must be greater than 5 degrees.**
- **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).**
- Ensure the motor and pump is in clear water, contamination will lead to blockages and higher power consumption.
- The unit should be earthed, by earthing the control panel directly to an earth spike through the earth wire.



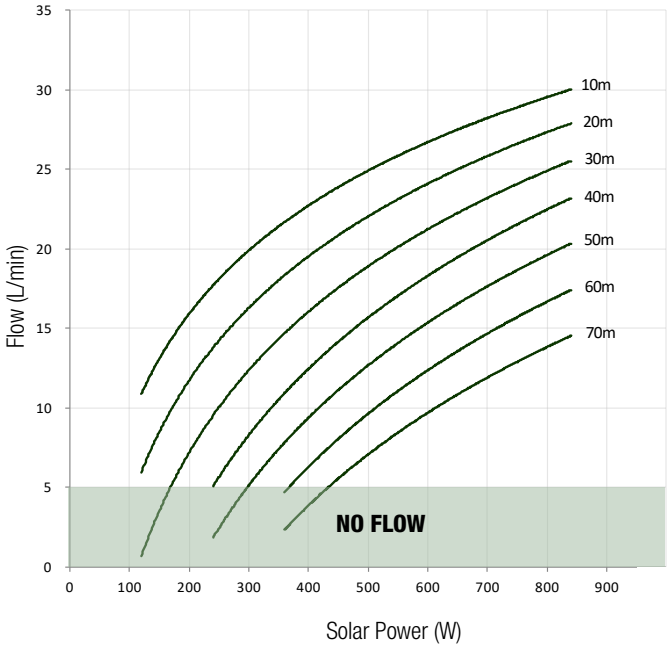
S4SUN
SOLAR SELECTOR

In just 6 easy steps, the solar selector will select the best pump based on your individual needs.

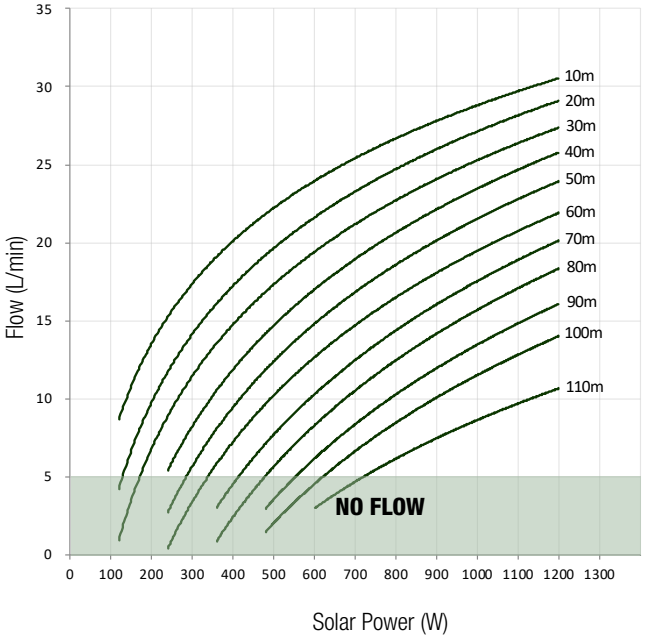
https://solarmotor.dabpumps.com/

S4-1 SERIES

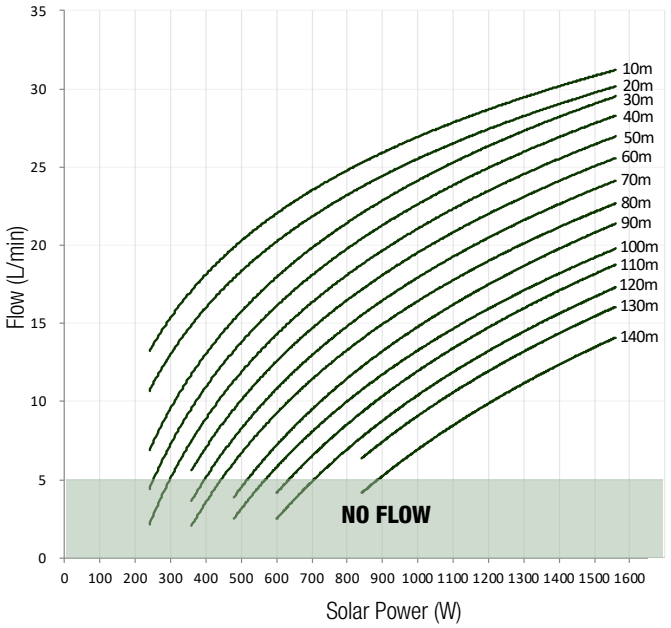
S4-1/13



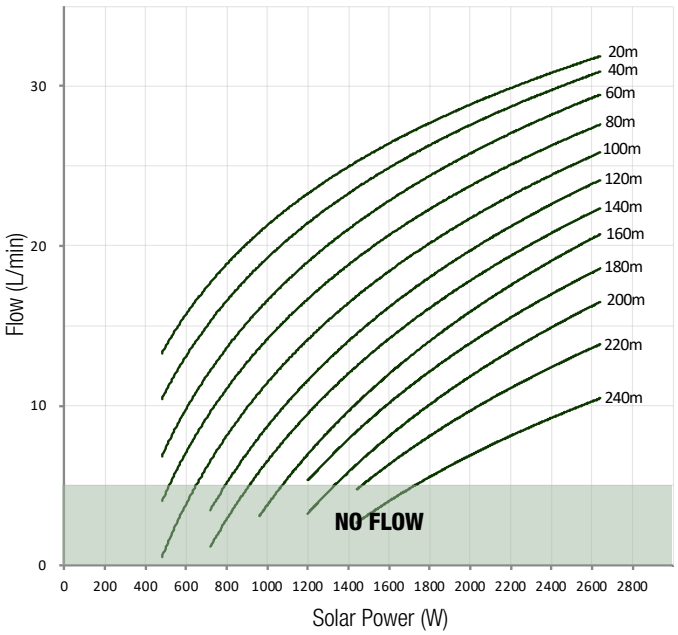
S4-1/19



S4-1/26

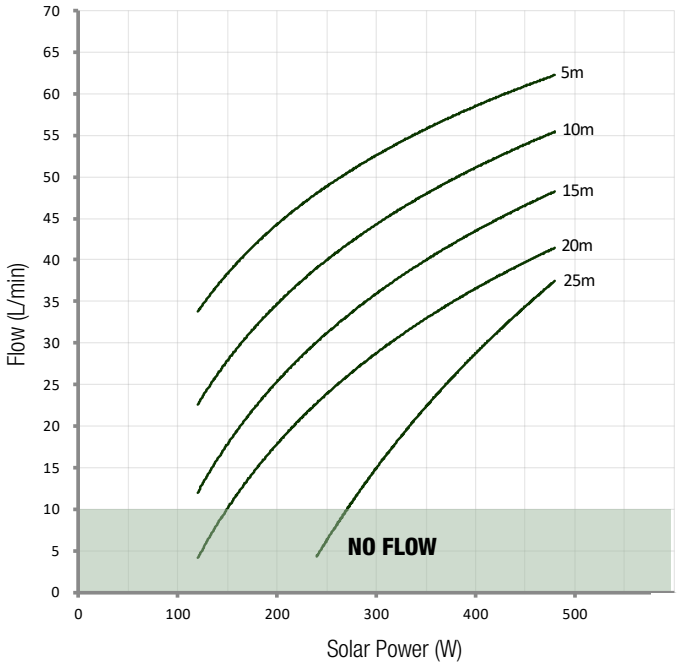


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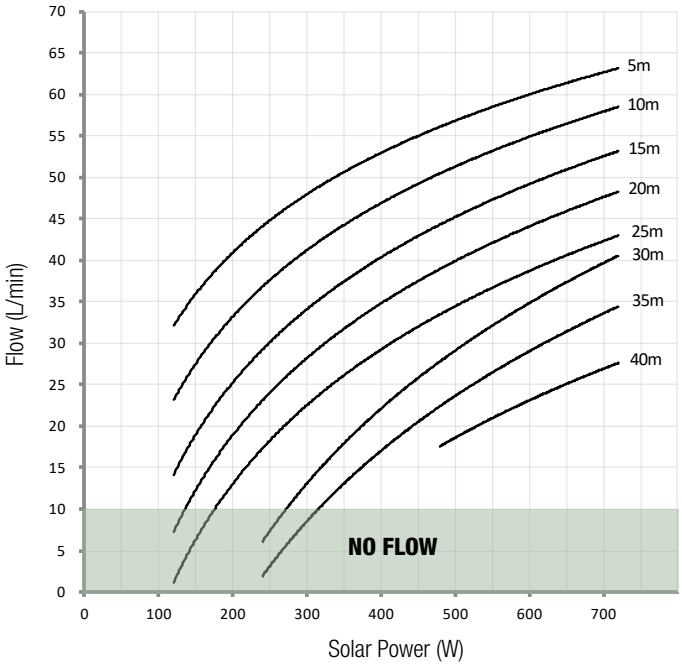


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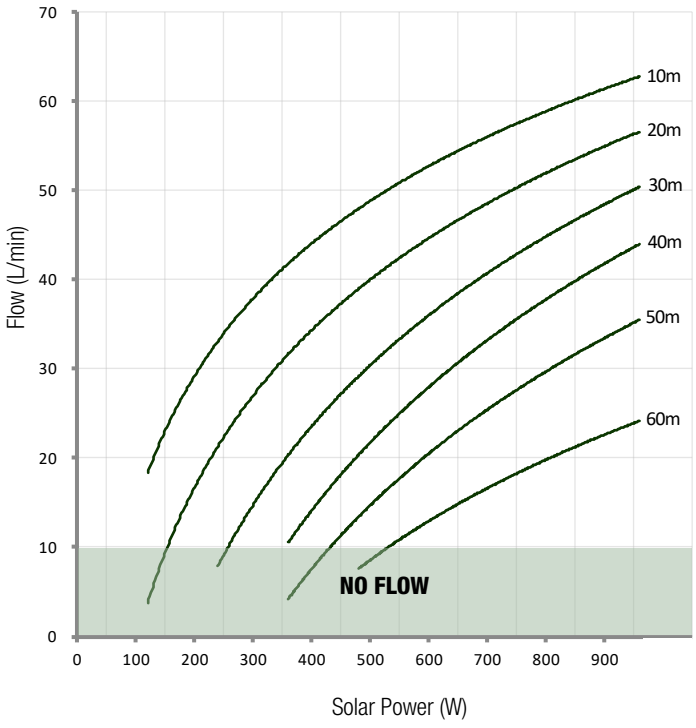
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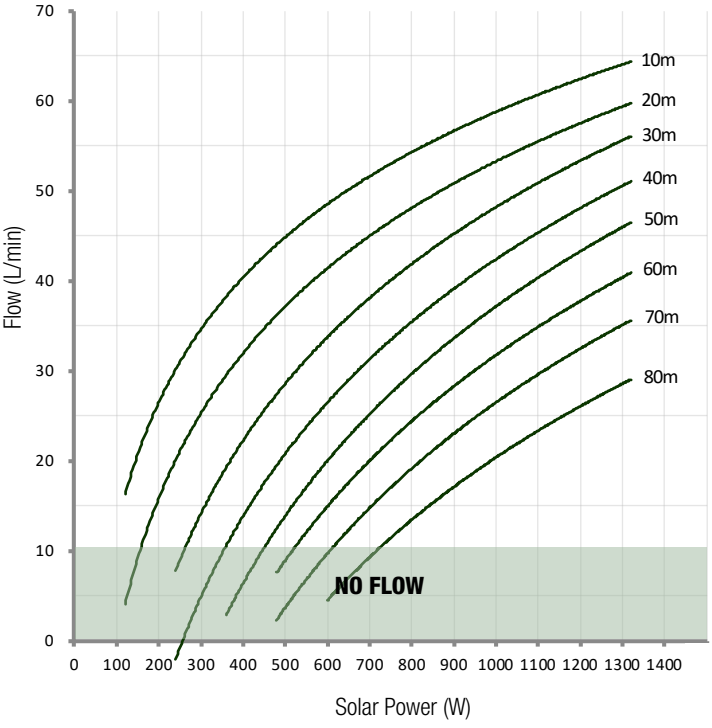
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S4-2/10

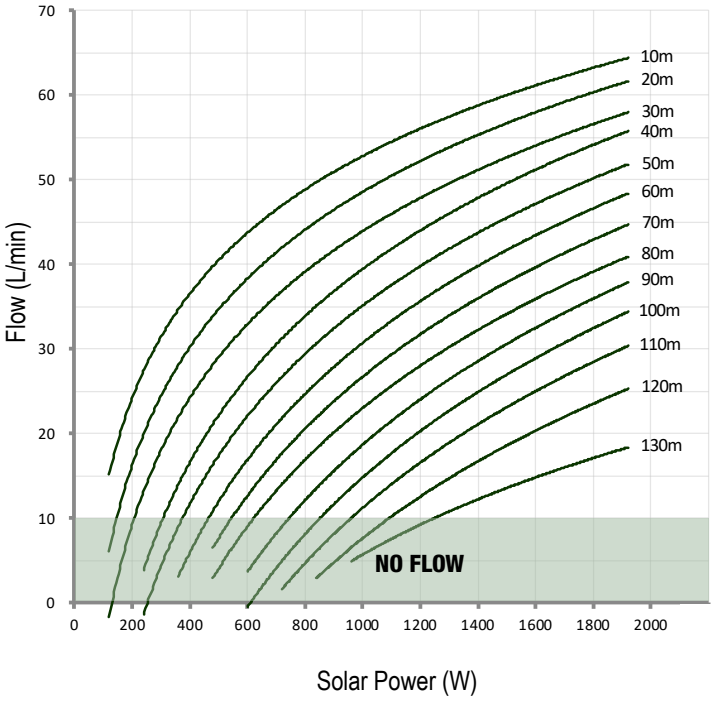


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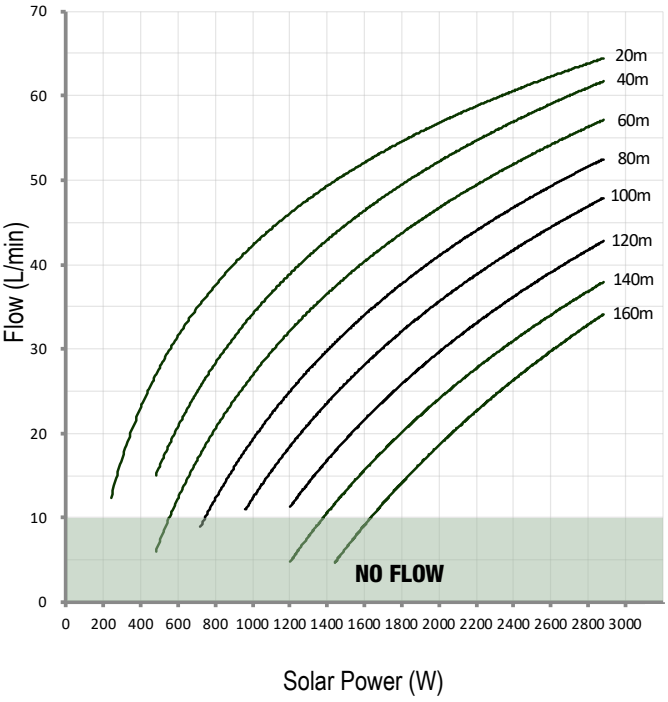


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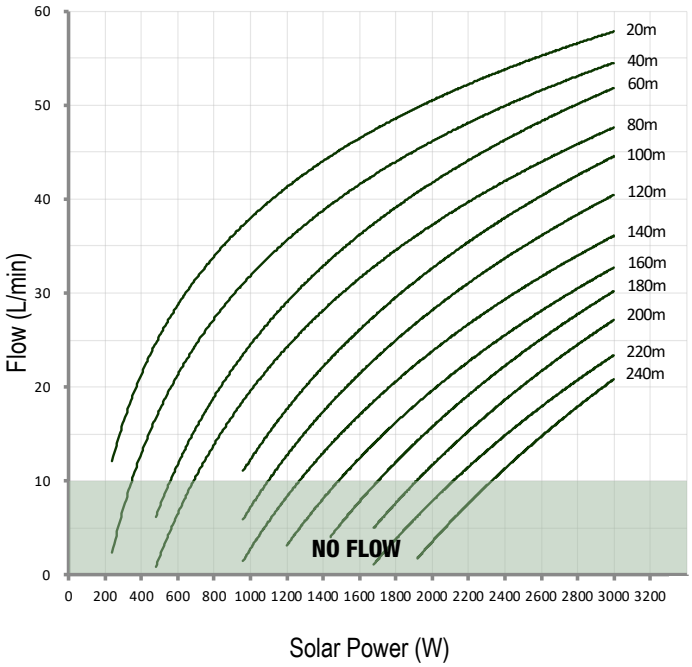
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S4-2/28

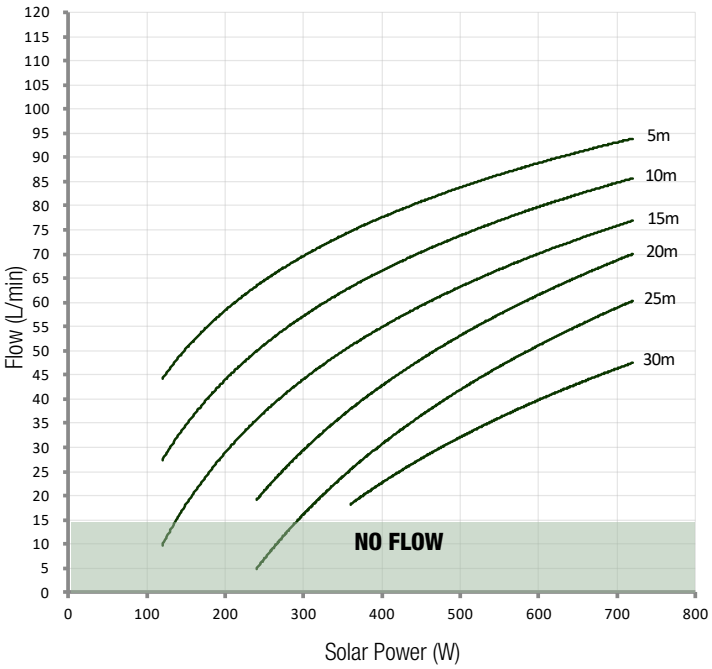


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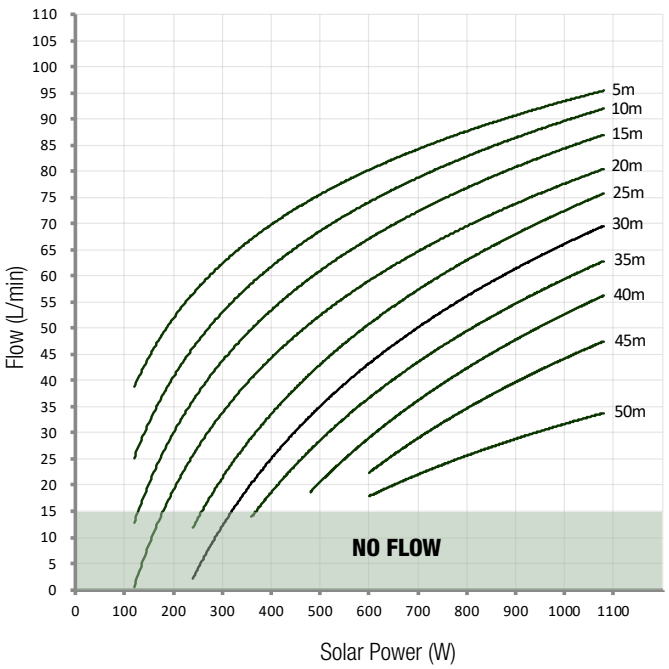


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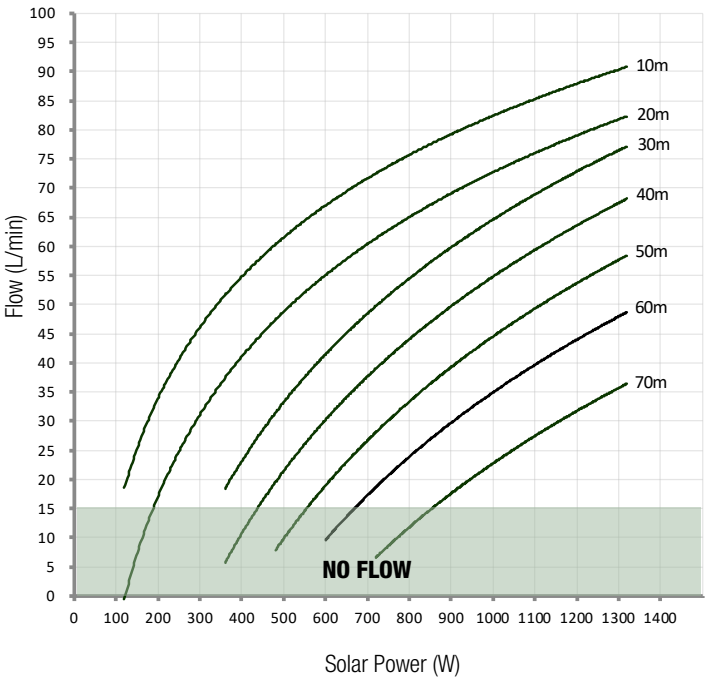
S4-3/6



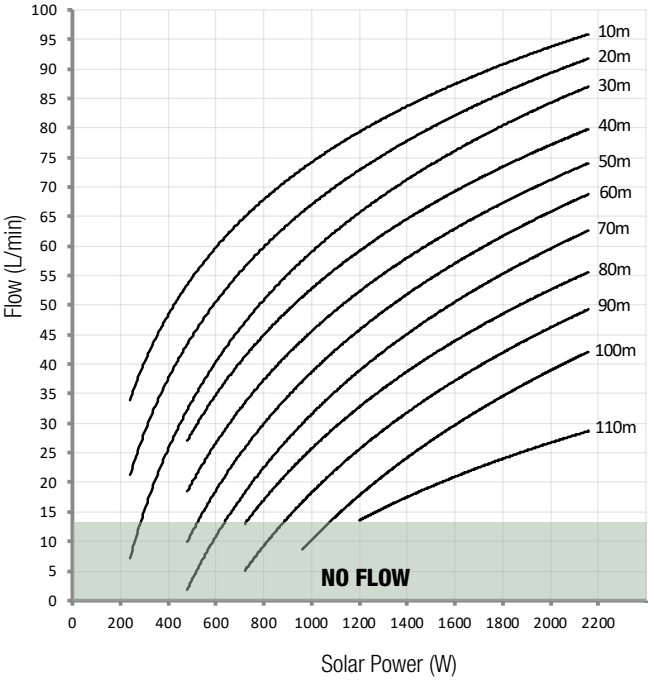
S4-3/9



S4-3/13

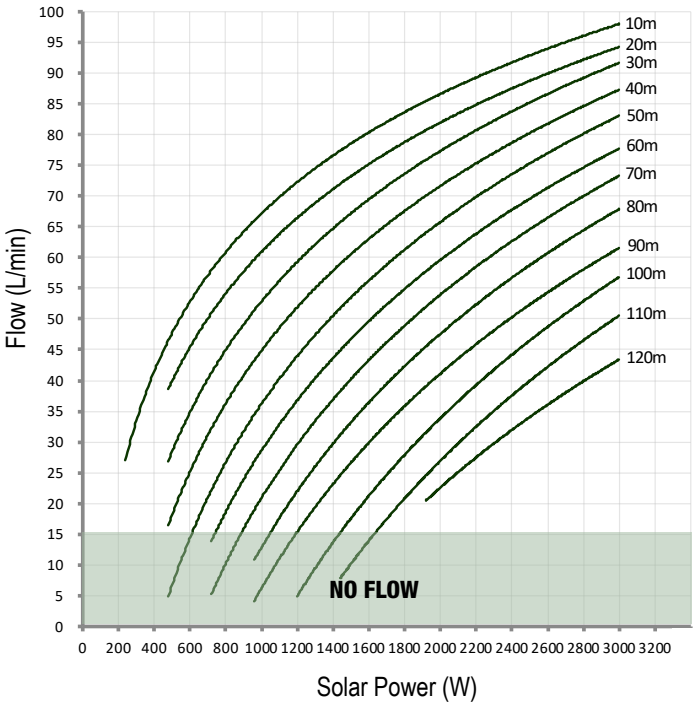


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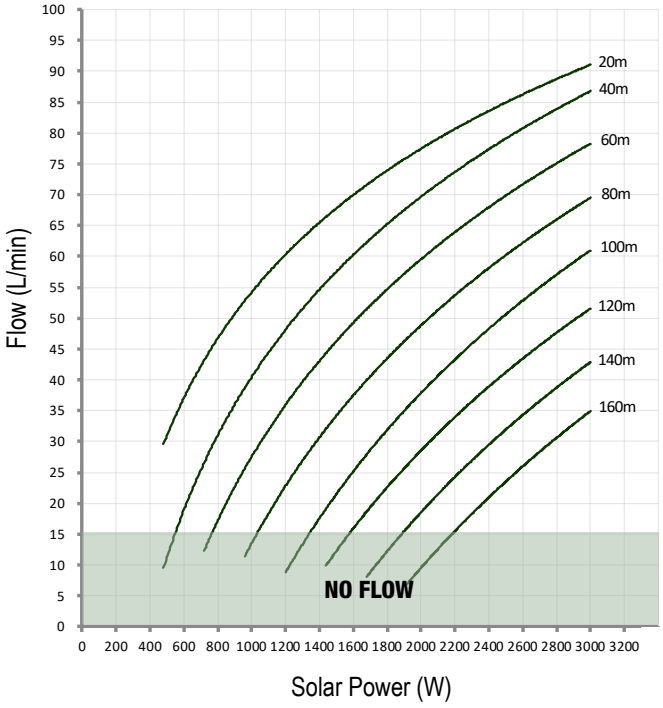


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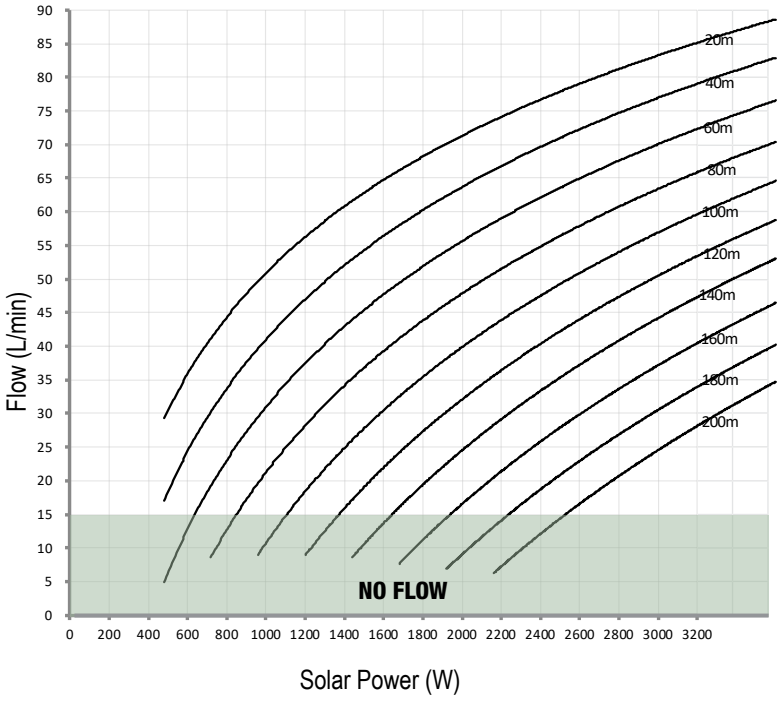
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S4-3/32

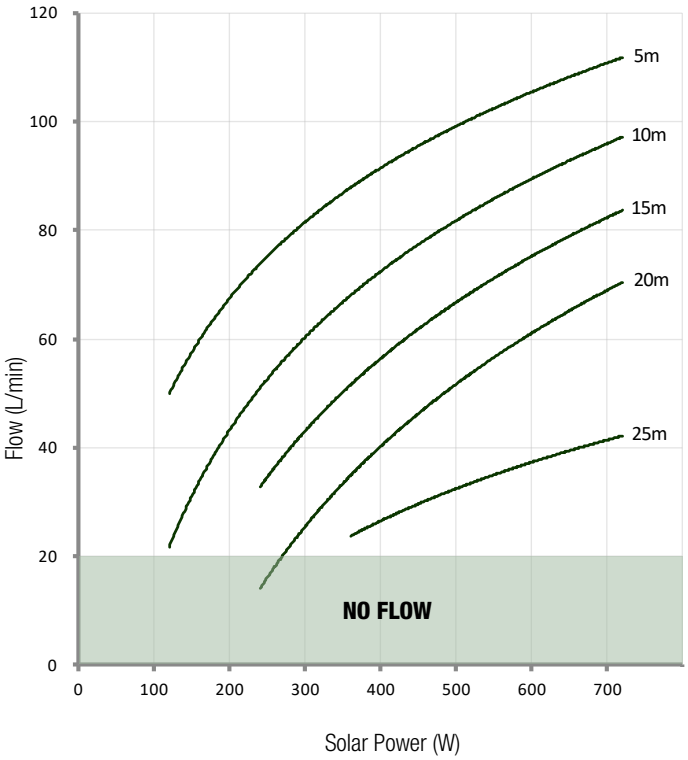


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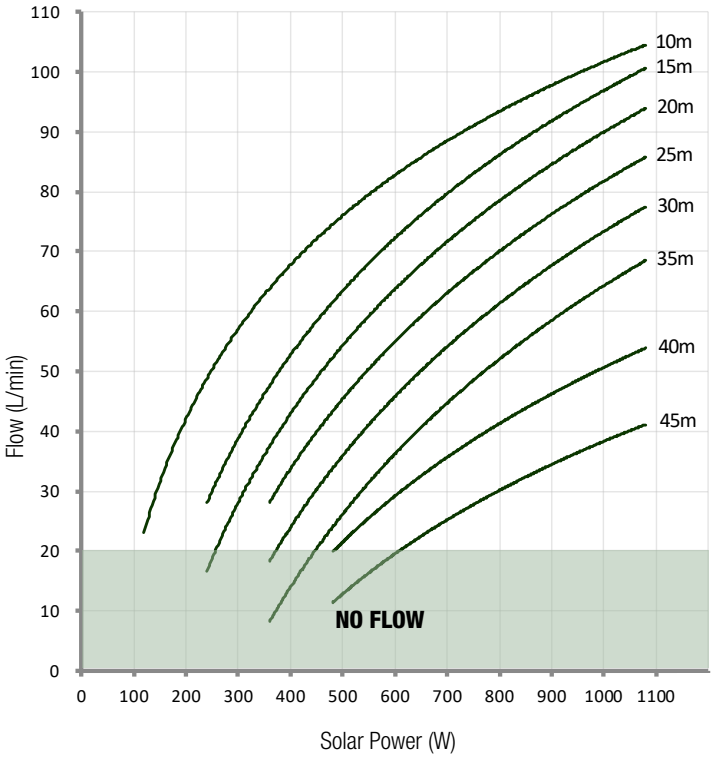


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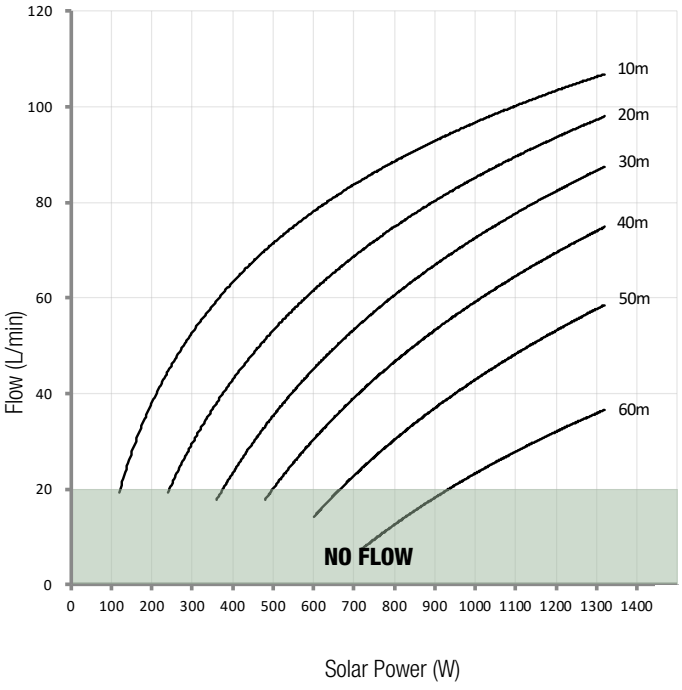
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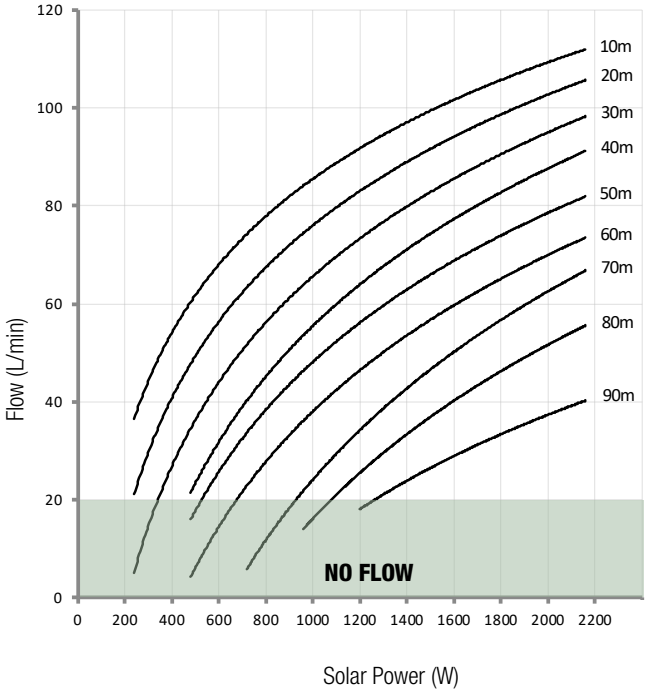
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S4-4/9

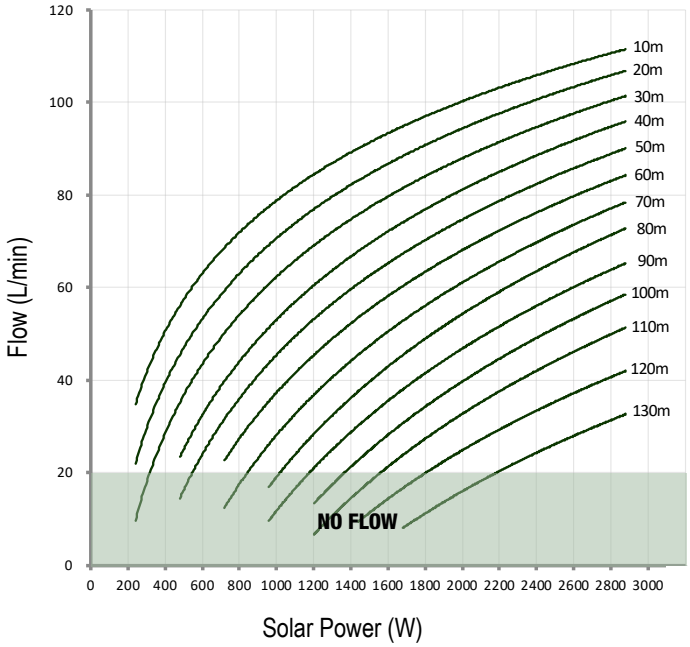


S4-4/14

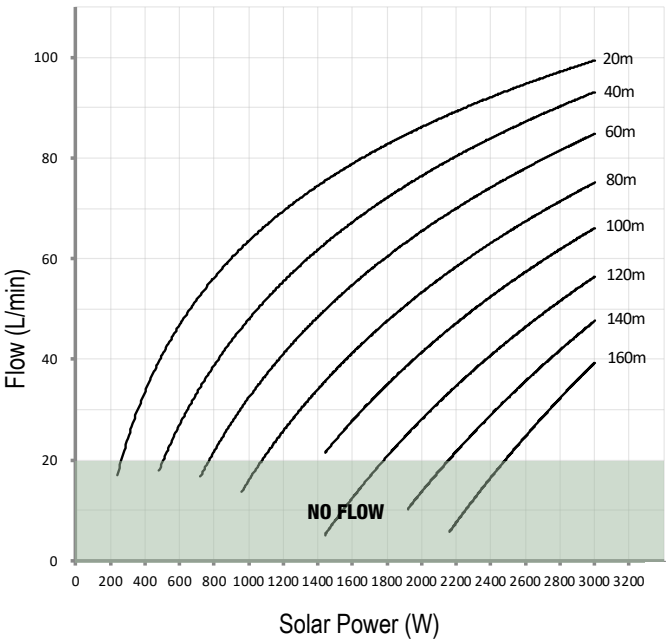


S4-4 SERIES

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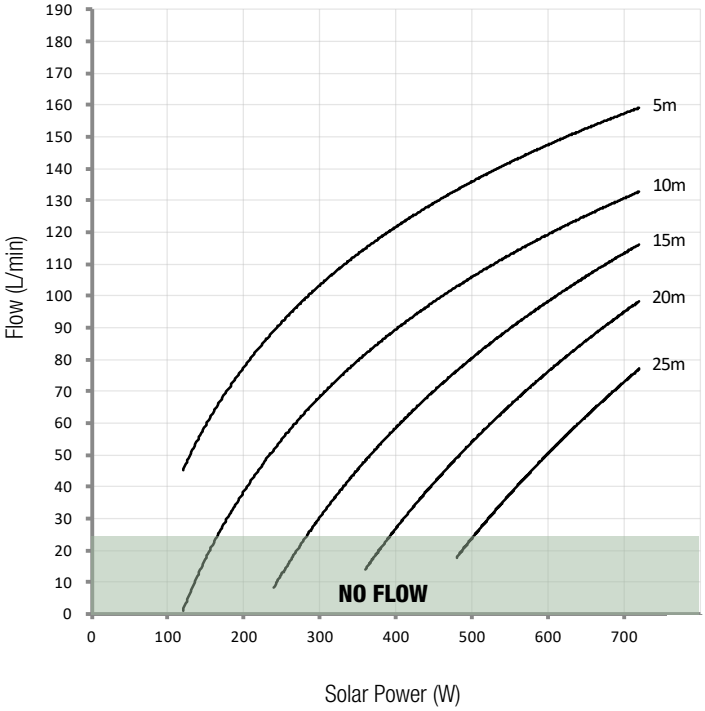


S4-4/27

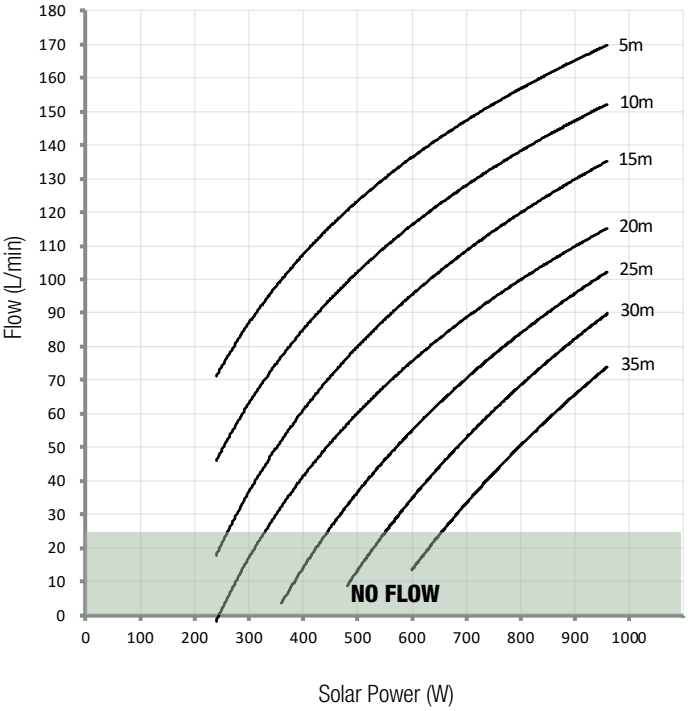


S4-6 SERIES

S4-6/5

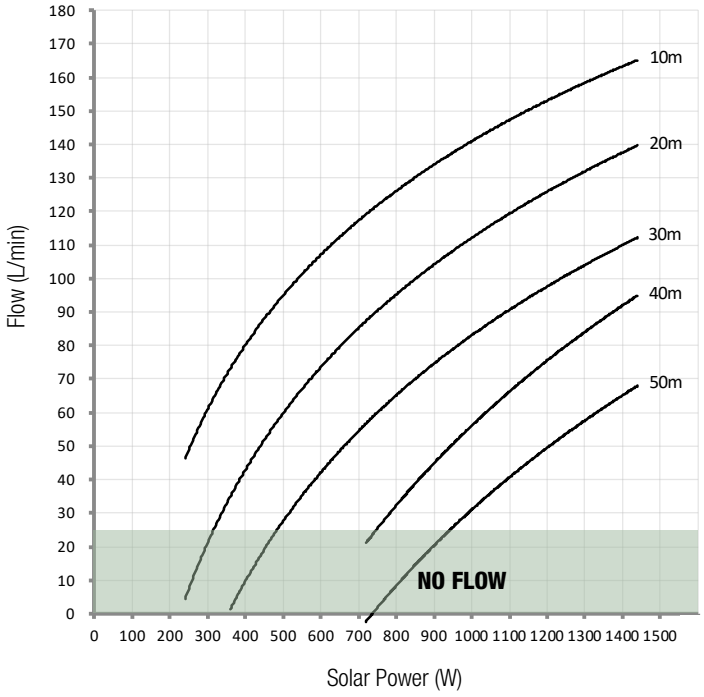


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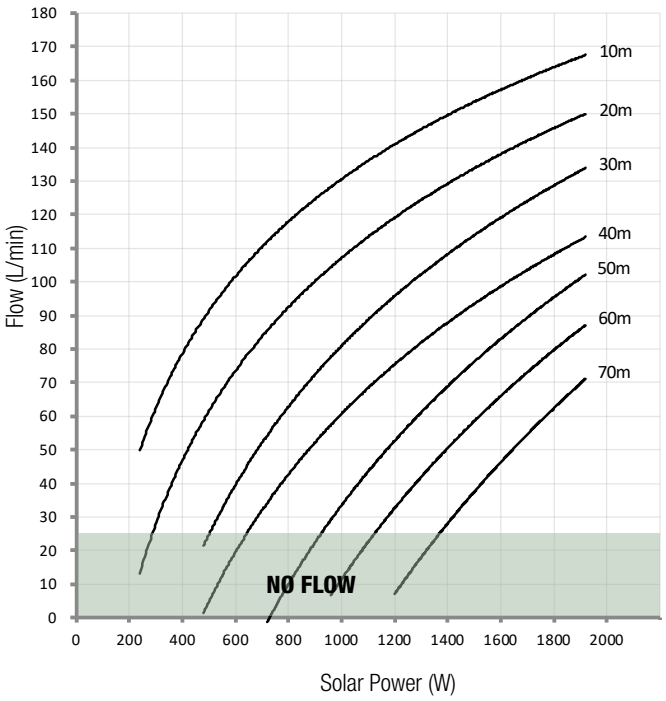


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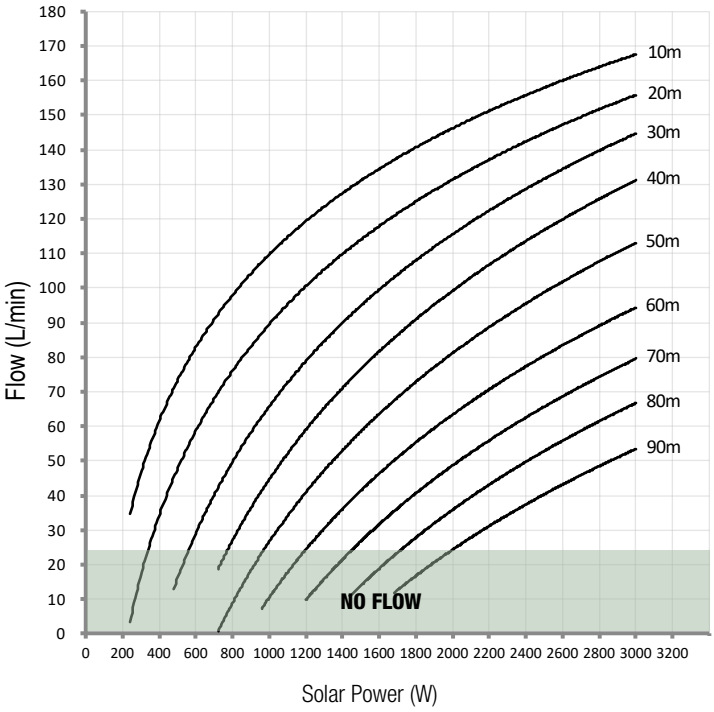
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S4-6/14

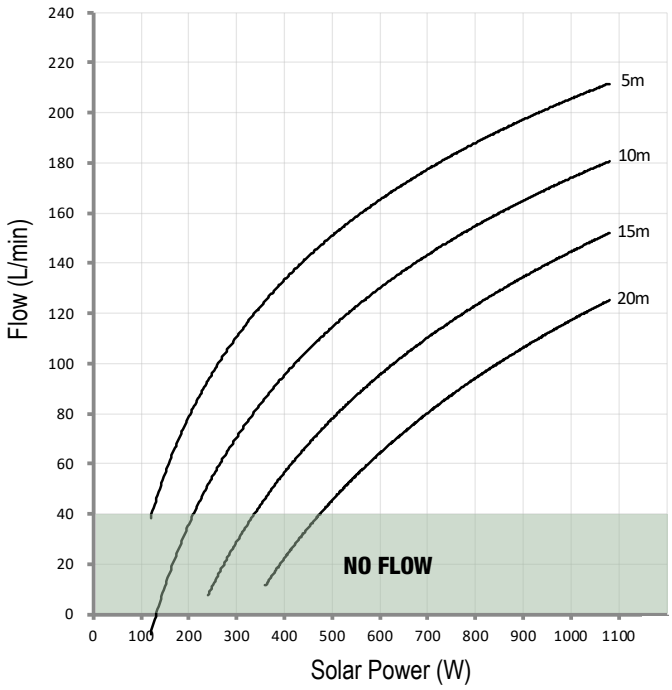


S4-6/21

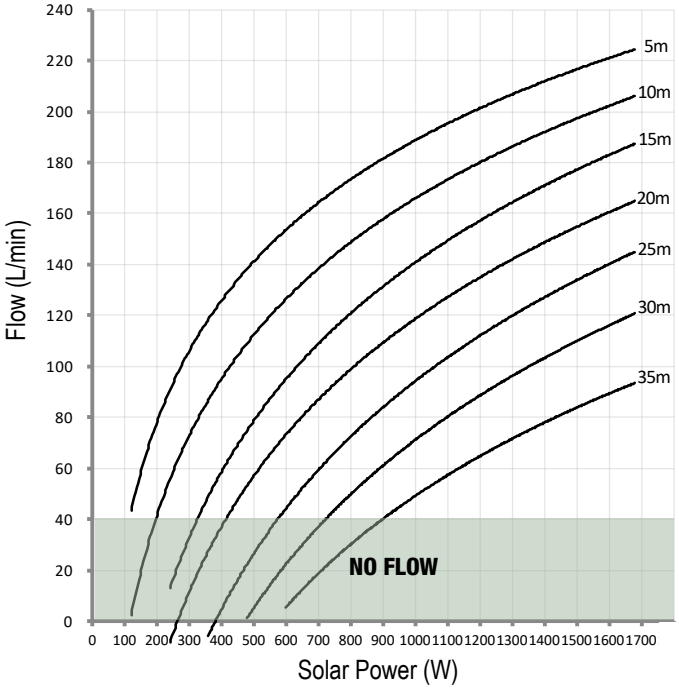


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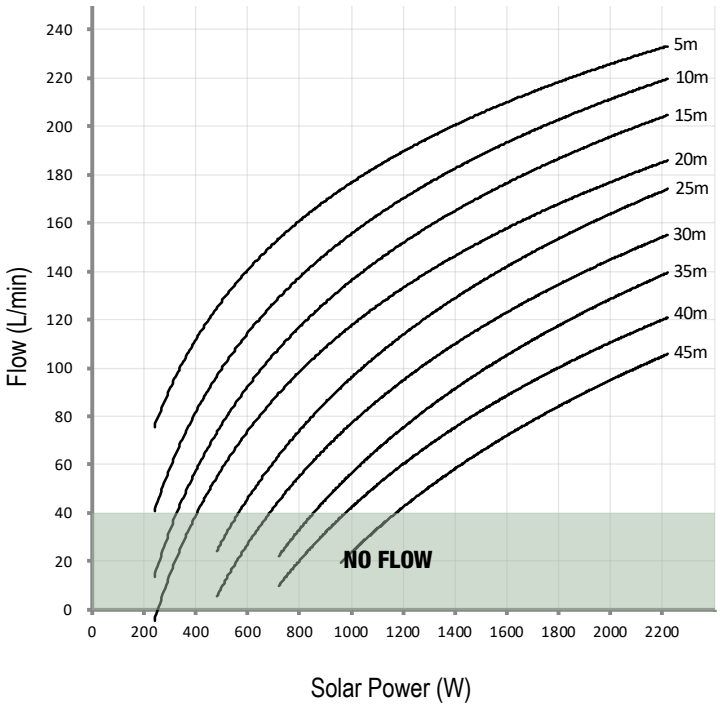
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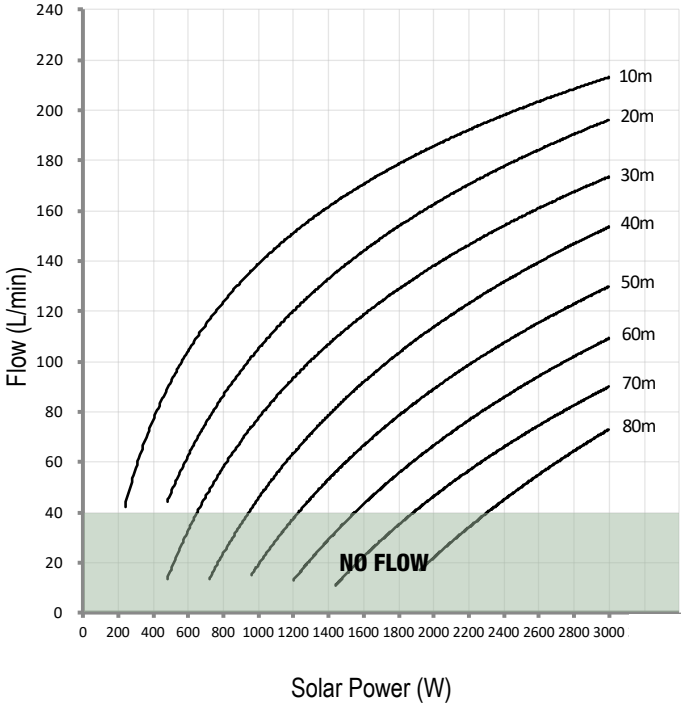
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S4-8/8

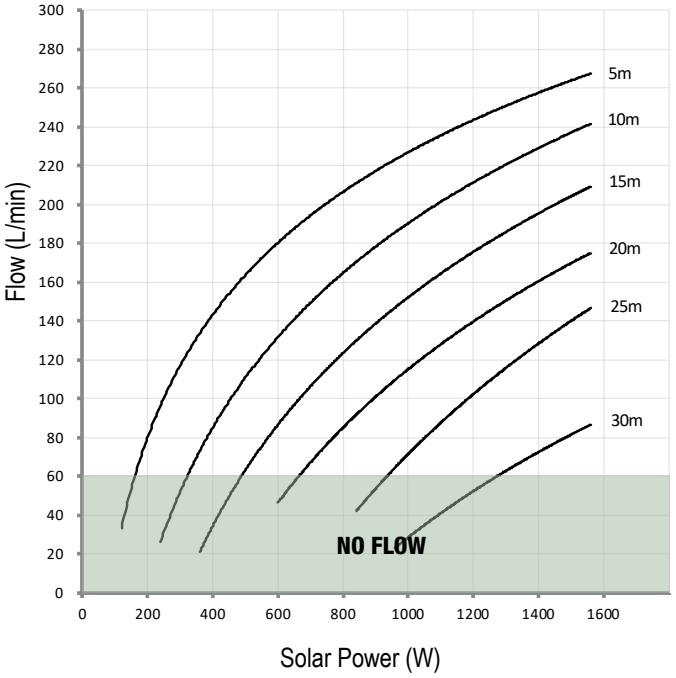


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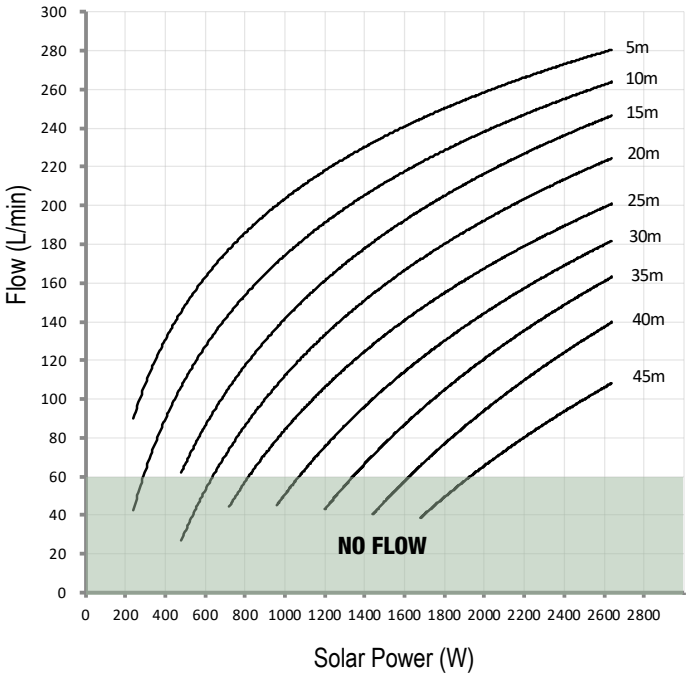


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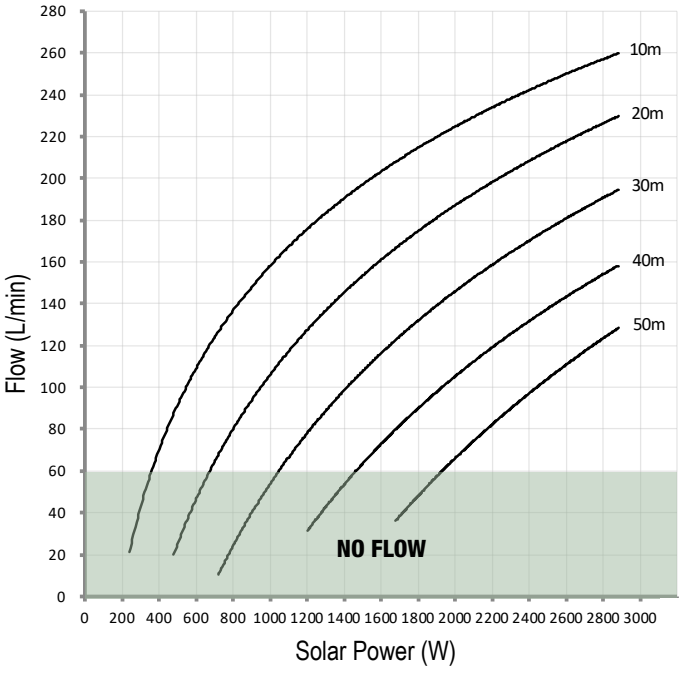
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S4-12/8

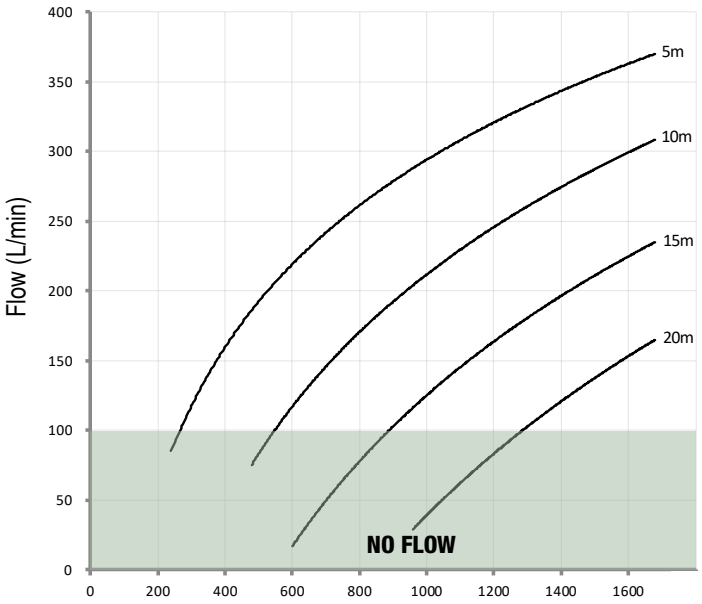


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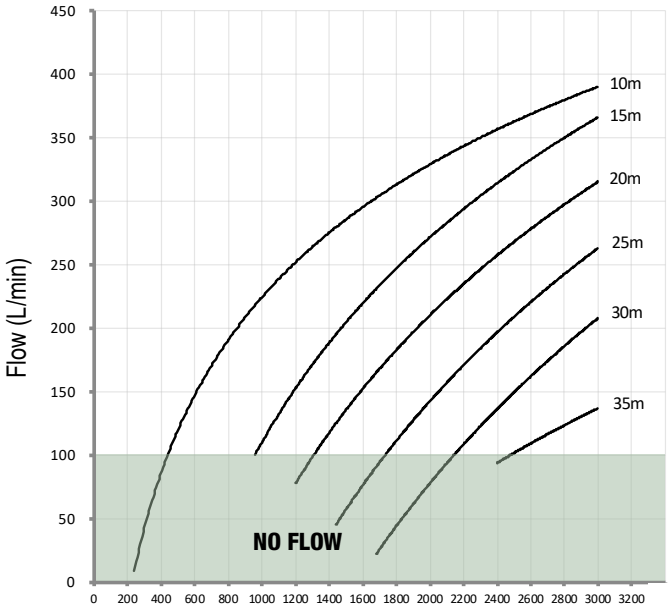


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S4-16/5



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