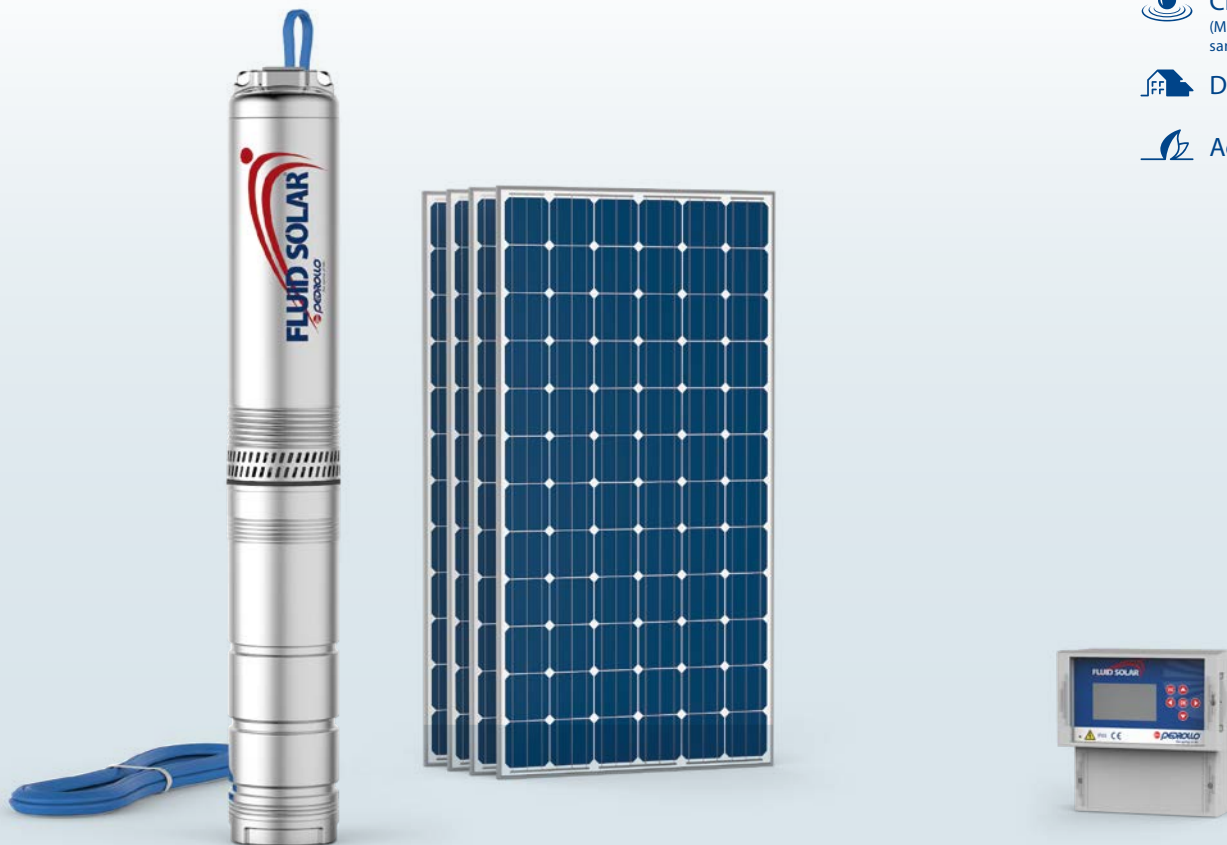


# FLUID SOLAR

## 4" high efficiency submersible solar pumps

-  Clean water  
(Maximum sand content 150 g/m<sup>3</sup>)
-  Domestic use
-  Agricultural use



### PERFORMANCE RANGE

- Flow rate up to **180 l/min** (10.8 m<sup>3</sup>/h)
- Head up to **180 m**

### APPLICATION LIMITS

- Maximum liquid temperature **+35 °C**
- Maximum sand content **150 g/m<sup>3</sup>**
- Maximum immersion depth of **40 m** with a sufficiently long power cable

### CONSTRUCTION AND SAFETY STANDARDS

EN 60335-1      EN 60034-1  
IEC 60335-1      IEC 60034-1  
CEI 61-150        CEI 2-3



EU REGULATION N. 547/2012

### CERTIFICATIONS

Company with management system certified DNV  
ISO 9001: QUALITY  
ISO 14001: ENVIRONMENT




### TECHNICAL CHARACTERISTICS

- 4" multi-stage submersible solar pumps
- High performance motor with permanent magnets
- High efficiency photovoltaic panels  
**PANASONIC** mod. VBHN240SJ25
- Electronic control incorporated in the motor

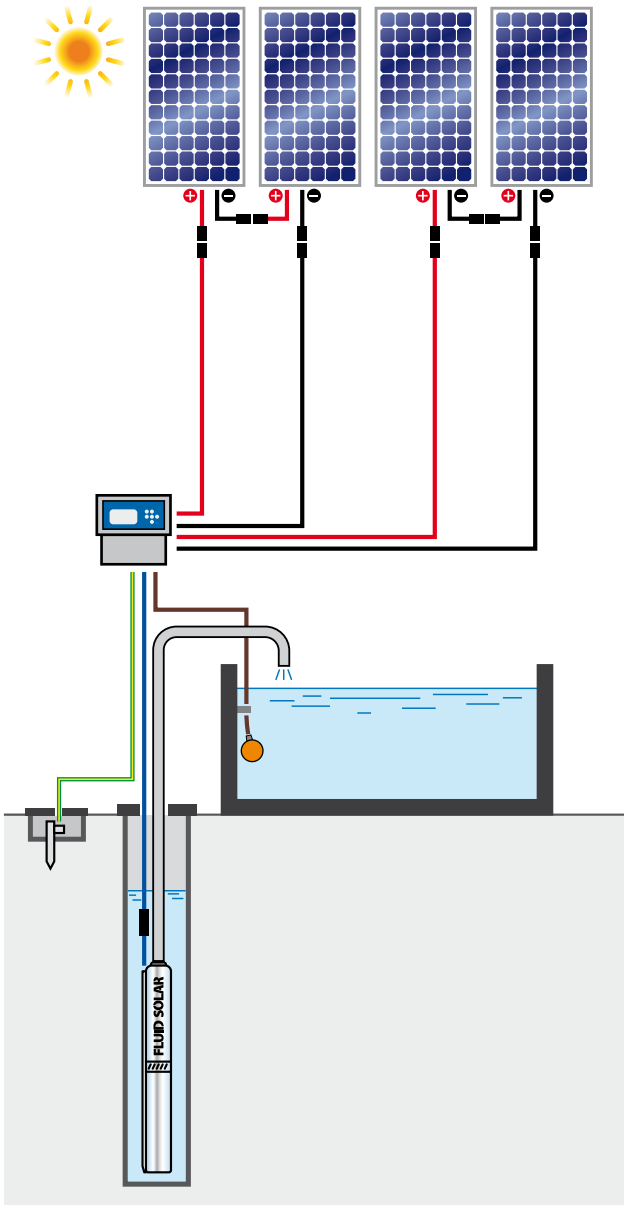
### INSTALLATION AND USE

The **FLUID SOLAR** pumps have been developed to pump clean water from a well utilising energy obtained from photovoltaic panels. The electronic control incorporated into the high performance motor converts the exit voltage from the panels and regulates the velocity of rotation of the motor in order to utilise the available energy most efficiently at any one time: **on a sunny day there will be a high velocity of rotation with a raised performance of the pump, and on a cloudy day the velocity and the performance will be reduced.**

### PATENTS - TRADE MARKS

- Registered Trade Mark n. 0001516301 
- Patent n. 0001413386, EP09781276.2
- Patent Pending n° PCT/IB2009/051491, PCT/IB2010/054499

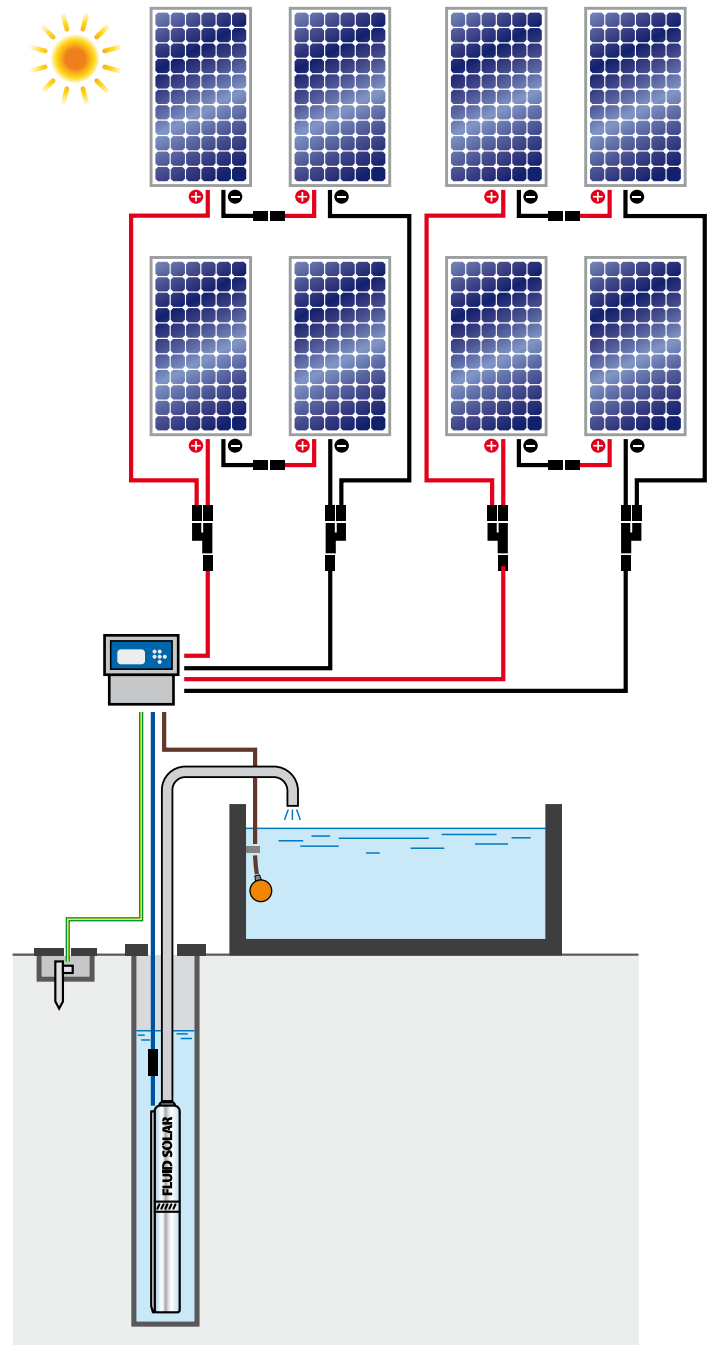
**STANDARD INSTALLATION**  
**FLUID SOLAR**  
 $P_1 = 750 \text{ W}$



**INSTALLATION REQUIREMENTS FOR PUMPS WITH  $P_1=750 \text{ W}$**

- In order to achieve its nominal performance the pump must be supplied by **4 photovoltaic panels**
- The available voltage of each panel must be in the range from **35 ÷ 50 V<sub>DC</sub>**
- The nominal total power of the 4 panels must be at least **980 W<sub>p</sub>**

**STANDARD INSTALLATION**  
**FLUID SOLAR**  
 $P_1 = 1500 \text{ W}$



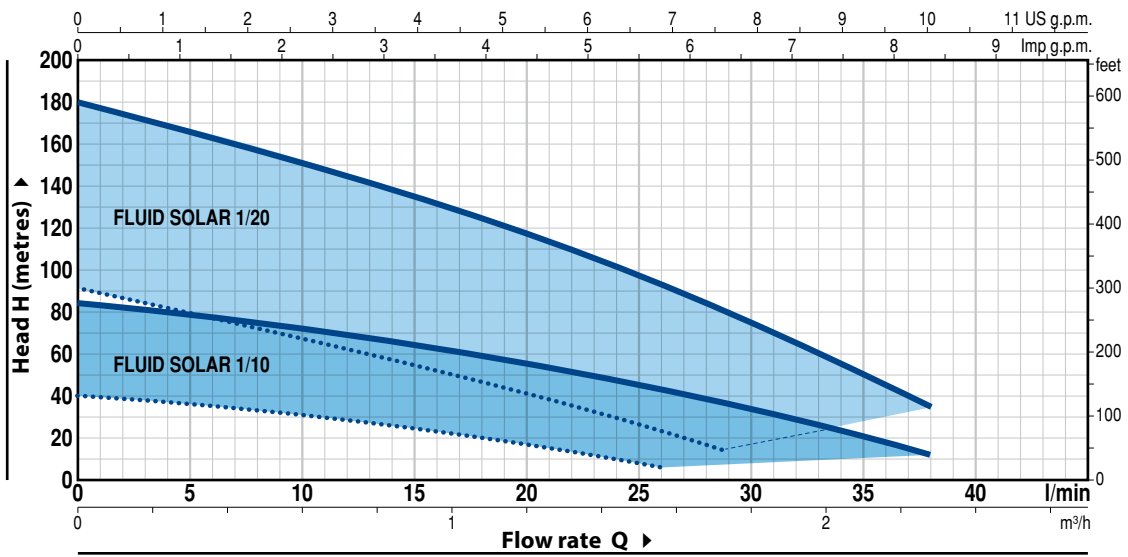
**INSTALLATION REQUIREMENTS FOR PUMPS WITH  $P_1=1500 \text{ W}$**

- In order to achieve its nominal performance the pump must be supplied by **8 photovoltaic panels**
- The available voltage of each panel must be in the range from **35 ÷ 50 V<sub>DC</sub>**
- The nominal total power of the 8 panels must be at least **1960 W<sub>p</sub>**

# FLUID SOLAR

## CHARACTERISTIC CURVES AND PERFORMANCE DATA

Tolerance of characteristic curves in compliance with EN ISO 9906 Grade 3B



### FLUID SOLAR 1/10

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a total rated power of 980 Wp

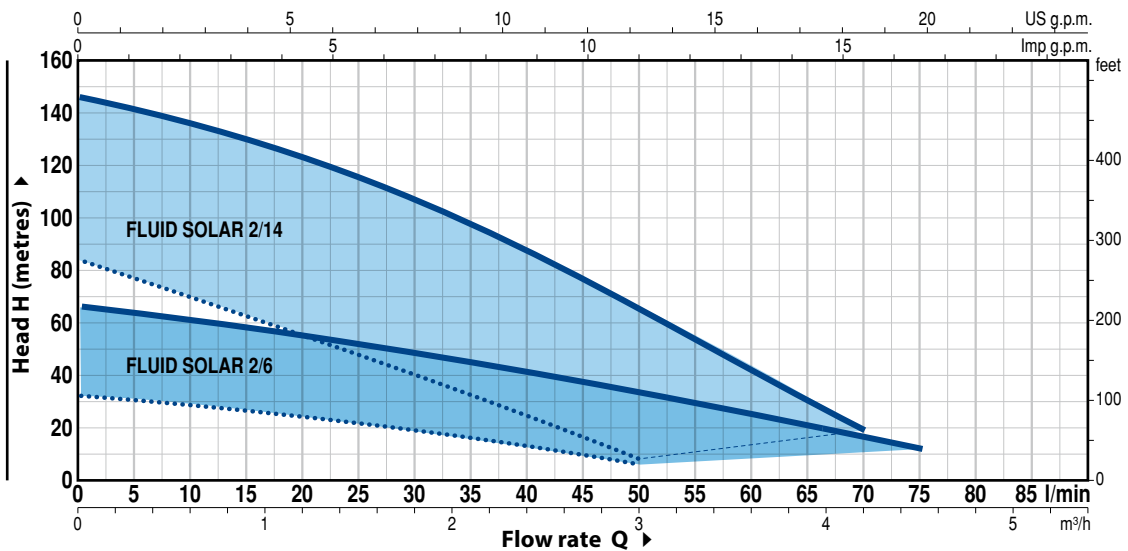
Q m <sup>3</sup> /h	0	0.3	0.6	1.2	1.6	1.8	2.3
Q l/min	0	5	10	20	26	30	38
H metres	84	79	72	56	42	33	12
	40	36	31	17	6		

### FLUID SOLAR 1/20

ABSORBED POWER P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a total rated power of 1960 Wp

Q m <sup>3</sup> /h	0	0.3	0.6	1.2	1.6	1.74	1.8	2.3
Q l/min	0	5	10	20	26	29	30	38
H metres	180	165	150	118	92	79	75	35
	90	80	67	41	22	13		



### FLUID SOLAR 2/6

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a total rated power of 980 Wp

Q m <sup>3</sup> /h	0	0.3	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.5
Q l/min	0	5	10	20	30	40	50	60	70	75
H metres	66	64	61	55	48	41	33	25	16	12
	32	31	28	24	19	13	6			

### FLUID SOLAR 2/14

ABSORBED POWER P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a total rated power of 1960 Wp

Q m <sup>3</sup> /h	0	0.3	0.6	1.2	1.8	2.4	3.0	3.6	4.2
Q l/min	0	5	10	20	30	40	50	60	70
H metres	146	140	136	123	107	87	65	42	20
	82	77	70	55	40	24	8		

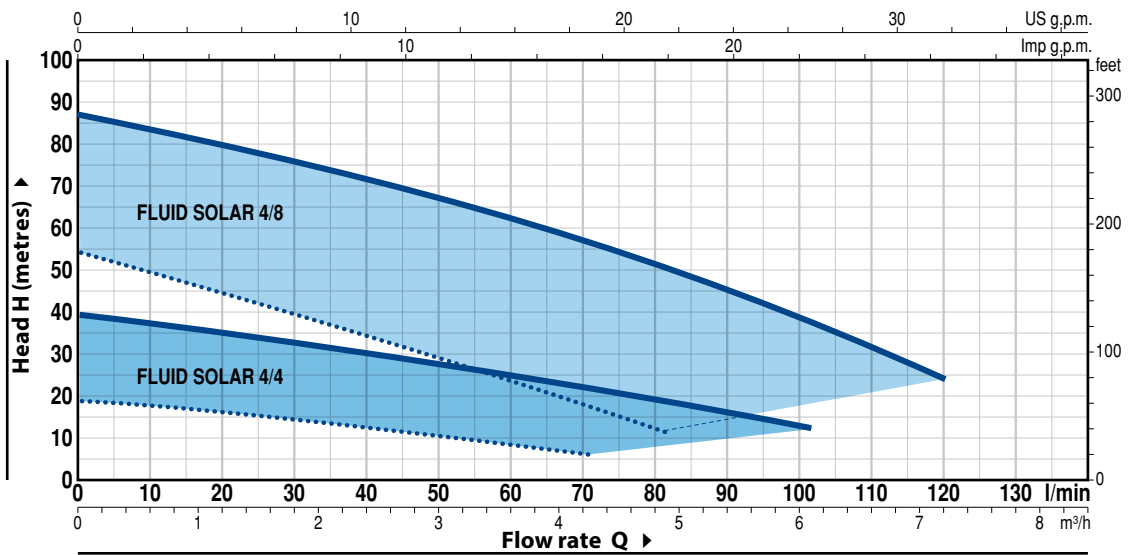
— Performance with a solar radiation of 1000 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 100 Vdc

.... Performance with a solar radiation of 300 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 70 Vdc

The performance curves illustrated above are obtained with the photovoltaic panels facing SOUTH (facing NORTH for installations in the southern hemisphere) and optimising the angle of inclination in relation to the horizon in compliance with the latitude of the installation site

## CHARACTERISTIC CURVES AND PERFORMANCE DATA

Tolerance of characteristic curves in compliance with EN ISO 9906 Grade 3B



### FLUID SOLAR 4/4

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a total rated power of 980 Wp

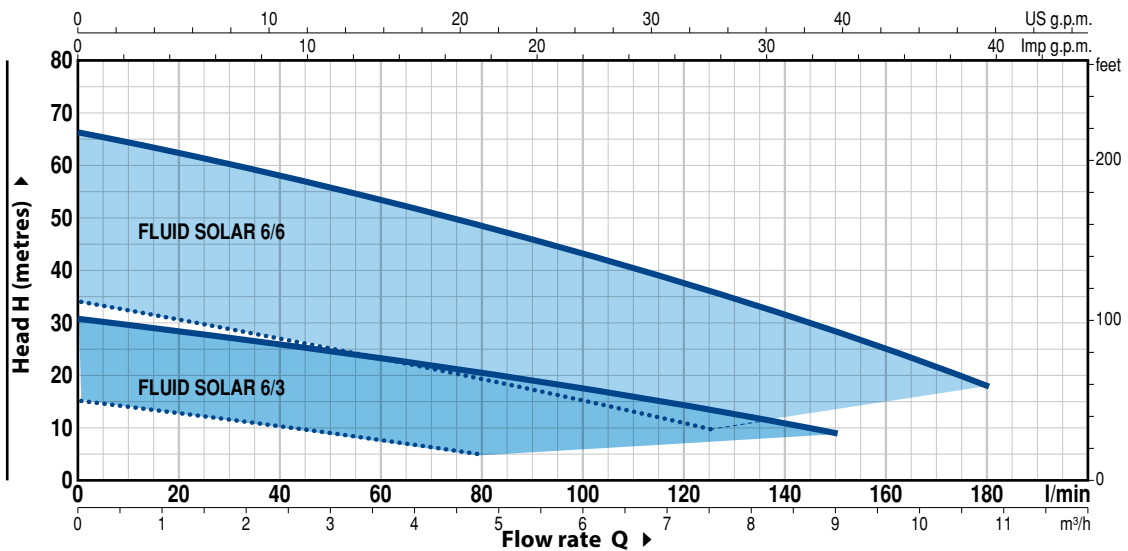
Q	m <sup>3</sup> /h												
	0	0.3	0.6	1.2	1.8	3.0	3.6	4.3	4.5	4.8	5.7	6.1	
l/min	0	5	10	20	30	50	60	71	75	80	95	102	
H metres	—	39	38.5	37	35	32.5	27	25	22	21	18	14	12
	....	19	18.5	17.5	16	14	10	8	6				

### FLUID SOLAR 4/8

ABSORBED POWER P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a total rated power of 1960 Wp

Q	m <sup>3</sup> /h									
	0	0.3	0.6	1.2	2.4	3.6	4.9	6.0	7.2	
l/min	0	5	10	20	40	60	82	100	120	
H metres	—	87	85	83	80	71	62	50	39	24
	....	54	52	49	45	34	23	11		



### FLUID SOLAR 6/3

ABSORBED POWER P<sub>1</sub> **750 W**

Performance with **4 photovoltaic panels** with a total rated power of 980 Wp

Q	m <sup>3</sup> /h								
	0	0.3	1.8	3.6	4.8	5.4	7.2	9.0	
l/min	0	5	30	60	80	90	120	150	
H metres	—	31	30	27	23	20	19	14	9
	....	15	14	11	8	5			

### FLUID SOLAR 6/6

ABSORBED POWER P<sub>1</sub> **1500 W**

Performance with **8 photovoltaic panels** with a total rated power of 1960 Wp

Q	m <sup>3</sup> /h									
	0	0.3	1.8	3.6	5.4	7.2	7.5	9.0	10.8	
l/min	0	5	30	60	90	120	125	150	180	
H metres	—	66	65	60	53	46	37	14	28	18
	....	34	33	29	23	17	11	10		

— Performance with a solar radiation of 1000 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 100 Vdc

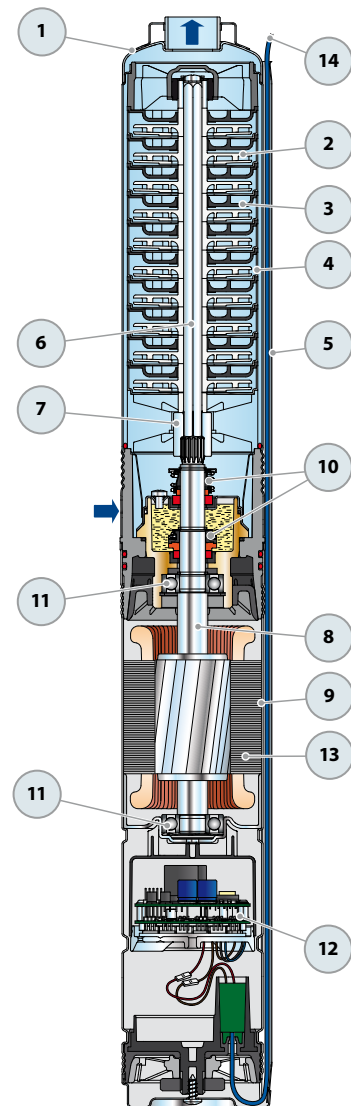
.... Performance with a solar radiation of 300 W/m<sup>2</sup> and with an available voltage of the photovoltaic panels of 70 Vdc

The performance curves illustrated above are obtained with the photovoltaic panels facing SOUTH (facing NORTH for installations in the southern hemisphere) and optimising the angle of inclination in relation to the horizon in compliance with the latitude of the installation site

# FLUID SOLAR P<sub>1</sub> = 750 W

## POS. COMPONENT CONSTRUCTION CHARACTERISTICS

<b>1 DELIVERY BODY AND EXTERNAL SLEEVE</b>	Acciaio inox AISI 304, provvista di bocca di mandata filettata ISO 228/1.				
<b>2 IMPELLERS</b>	Lexan 141-R per FLUID SOLAR 1/10, 4/4, 6/3 Delrin 100P per FLUID SOLAR 2/6				
<b>3 DIFFUSERS</b>	Noryl FE1520PW				
<b>4 STAGE BOXES / STAGE LIDS</b>	Acciaio inox AISI 304				
<b>5 CABLE COVER</b>	Acciaio inox AISI 304				
<b>6 PUMP SHAFT</b>	Acciaio inox AISI 304 per FLUID SOLAR 1/10, 4/4, 4/8, 6/3				
<b>7 DRIVE COUPLING</b>	Acciaio inox AISI 316L per FLUID SOLAR 1/10, 4/4, 4/8, 6/3				
<b>8 MOTOR SHAFT</b>	Acciaio inox EN 10088-3 – 1.4104				
<b>9 MOTOR SLEEVE</b>	Acciaio inox AISI 304				
<b>10 TWO MECHANICAL SEALS SEPARATED BY AN OIL CHAMBER</b>					
<i>Tenuta</i>	<i>Albero</i>	<i>Posizione</i>	<i>Materiali</i>		
<i>Tipo</i>	<i>Diametro</i>		<i>Anello fisso</i>	<i>Anello rotante</i>	<i>Elastomero</i>
<b>STA-17</b>	<b>Ø 17 mm</b>	Lato motore	Carburo di silicio	Grafite	NBR
<b>ST1-16</b>	<b>Ø 16 mm</b>	Lato pompa	Carburo di silicio	Grafite	NBR
<b>11 BEARINGS</b>	<b>6203 2RS - C3E / 6203 ZZ - C3E</b>				
<b>12 INVERTER</b>					
<b>13 ELECTRIC MOTOR</b>	<ul style="list-style-type: none"> <li>– Submersible PEDROLLO motor, suitable for continuous duty (with dry, rewindable stator).</li> <li>– High performance motor with permanent magnets</li> <li>– Insulation: class F</li> <li>– Protection: IP X8</li> </ul>				



<b>14 POWER CABLE</b>	<p>⇒ <b>PBS-P type approved for use in drinking water by "ACS" in compliance with BS 6920, approval n. 04 ACCLI 201 Standard length 2 metres</b></p> <p>Equipment supplied: connection kit for RPS2 cables</p>
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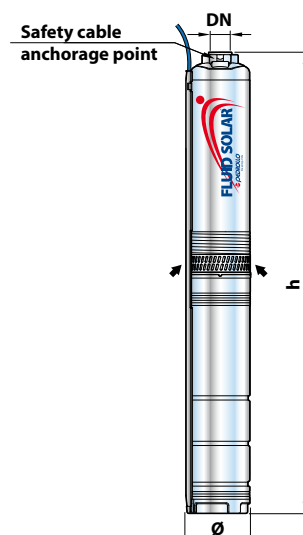
<b>15 CONTROL BOX</b>	
<b>16 CONNECTORS</b>	<ul style="list-style-type: none"> <li>– 2 SMK male connectors</li> <li>– 2 SMK female connectors</li> </ul>



## DIMENSIONS AND WEIGHT

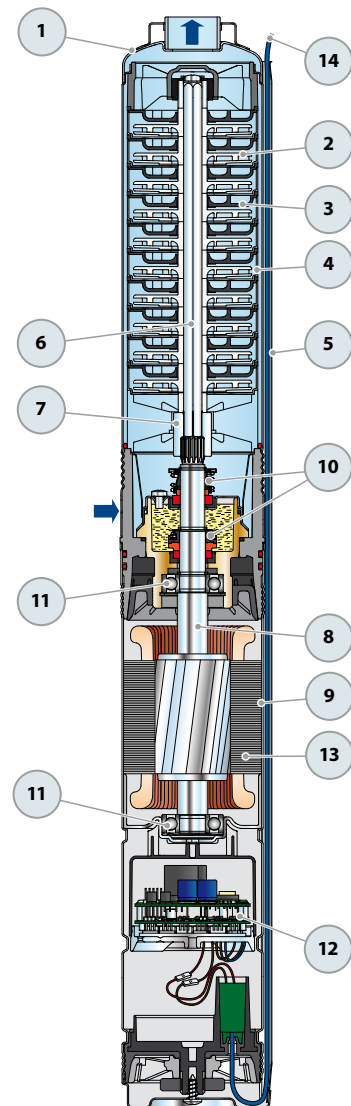
MODEL	PORT DN	N° STAGES	DIMENSIONS mm		kg *
			Ø	h	
FLUID SOLAR 1/10	1"	10	100	710	12.3
FLUID SOLAR 2/6		6		587	11.4
FLUID SOLAR 4/4		4		614	11.0
FLUID SOLAR 6/3	1 1/4"	3		616	11.0

(\* weight of the pump with control box)



## POS. COMPONENT CONSTRUCTION CHARACTERISTICS

<b>1 DELIVERY BODY AND EXTERNAL SLEEVE</b>	Acciaio inox AISI 304, provvista di bocca di mandata filettata ISO 228/1.				
<b>2 IMPELLERS</b>	Lexan 141-R				
<b>3 DIFFUSERS</b>	Noryl FE1520PW				
<b>4 STAGE BOXES / STAGE LIDS</b>	Acciaio inox AISI 304				
<b>5 CABLE COVER</b>	Acciaio inox AISI 304				
<b>6 PUMP SHAFT</b>	Acciaio inox AISI 304				
<b>7 DRIVE COUPLING</b>	Acciaio inox AISI 316L				
<b>8 MOTOR SHAFT</b>	Acciaio inox EN 10088-3 – 1.4104				
<b>9 MOTOR SLEEVE</b>	Acciaio inox AISI 304				
<b>10 TWO MECHANICAL SEALS SEPARATED BY AN OIL CHAMBER</b>					
<i>Tenuta</i>	<i>Albero</i>	<i>Posizione</i>	<i>Materiali</i>		
<i>Tipo</i>	<i>Diametro</i>		<i>Anello fisso</i>	<i>Anello rotante</i>	<i>Elastomero</i>
<b>STA-17</b>	<b>Ø 17 mm</b>	Lato motore	Carburo di silicio	Grafite	NBR
<b>ST1-16</b>	<b>Ø 16 mm</b>	Lato pompa	Carburo di silicio	Grafite	NBR
<b>11 BEARINGS</b>	<b>3203 B 2RS - C3E / 6203 ZZ - C3E</b>				
<b>12 INVERTER</b>					
<b>13 ELECTRIC MOTOR</b>	<ul style="list-style-type: none"> <li>– Submersible PEDROLLO motor, suitable for continuous duty (with dry, rewindable stator).</li> <li>– High performance motor with permanent magnets</li> <li>– Insulation: class F</li> <li>– Protection: IP X8</li> </ul>				



**14 POWER CABLE**

⇒ **PBS-P type approved for use in drinking water by "ACS" in compliance with BS 6920, approval n. 04 ACCLI 201 Standard length 2 metres**

Equipment supplied: connection kit for RPS2 cables

**15 CONTROL BOX**

**16 CONNECTORS**

- 2 SMK male connectors
- 2 SMK female connectors
- N. 2 Y female/male-male connectors type MC4
- N. 2 Y male/female-female connectors type MC4



## DIMENSIONS AND WEIGHT

MODEL	PORT DN	N° STAGES	DIMENSIONS mm		kg *
			Ø	h	
FLUID SOLAR 1/20	1"	20	100	990	13.9
FLUID SOLAR 2/14		14		855	13.8
FLUID SOLAR 4/8		8		772	13.7
FLUID SOLAR 6/6	1 1/4"	6		776	13.7

(\* weight of the pump with control box)

