

# PS600 BADU Top12



## Solar Operated Centrifugal Surface Pump

### Characteristics

- flow rate up to 15 m<sup>3</sup>/h
- maintenance-free thanks to brushless DC motor
- excellent efficiency

### Application

- swimming pool water circulation through a filter system and thermal collectors
- pond management
- irrigation
- aquariums
- etc.

### Components

#### Pump End (PE) BADU Top 12

- monoblock-type pump with integrated strainer tank
- bellow mechanical seal is mounted on a plastic shaft protected sleeve
- motor/pump shaft has no contact with fluid
- total electric separation
- strainer capacity approx. 3 l
- strainer basket mesh size approx. 3.2 x 2.6 mm

#### Material Used For Pump End

- pump casing, strainer basket: PP
- flange, gland housing: PP TV 40
- diffuser: PP TV 40
- impeller: PA 66 GF 30 / PC
- lid: PC, transparent
- mechanical seal: carbon / ceramic / NBR
- bolts: steel, galvanized

#### Motor ECDRIVE 600 BADU Top

- brushless, maintenance-free DC motor

#### Controller PS600

- controlling of the pump system and monitoring of the operating states
- mounted at surface (no submerged electronic parts)
- two control inputs for well probe (dry running protection), float or pressure switches, remote control etc.
- automatic reset 20 minutes after well probe turns pump off
- protected against reverse polarity, overload and high temperature
- speed control, max. pump speed adjustable to reduce flow rate to approx. 30 %
- solar operation: integrated MPPT (Maximum Power Point Tracking)
- battery operation: low voltage disconnect and restart after battery has recovered
- max. efficiency 92 % (motor + controller)

### Warranty

Two years manufacturer's warranty against defects in material and workmanship

| Pump System                                     | PS600 BADU Top 12                                    |
|---|--|
| article #                                       | 2921   |
| controller                                      | PS600  |
| motor   | ECDRIVE 600 BADU Top                                 |
| pump end (PE)                                   | BADU Top 12<br>(manufacturer Speck-Pumps)            |
| source of energy<br>(not contained in delivery) | solar generator (340-900 Wp)<br>battery<br>DC source |



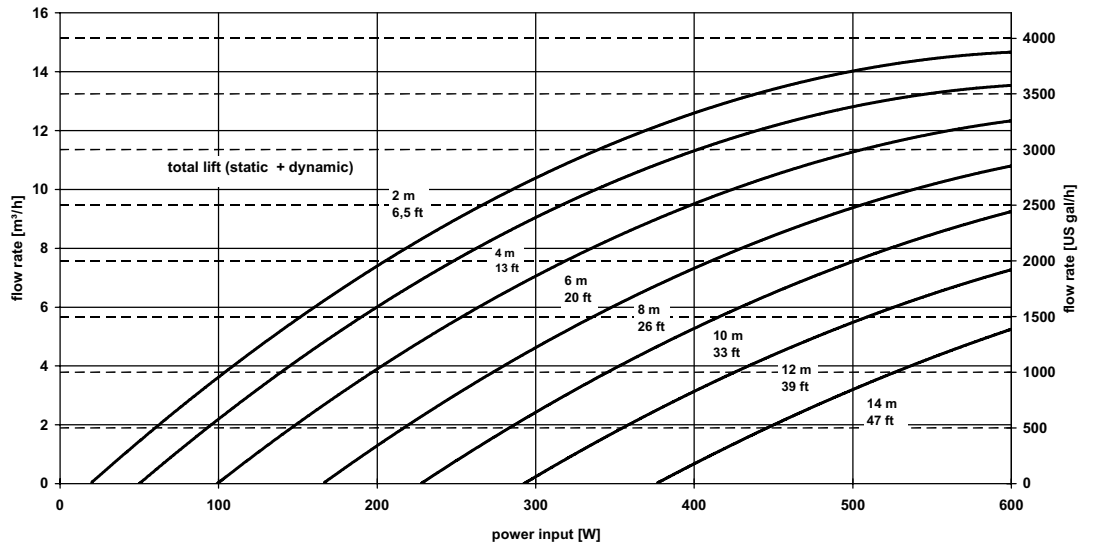
**System Sizing Table  
Solar Operation**

solar generator: nominal voltage 48-  
72 V DC, open circuit voltage max.  
150 V DC

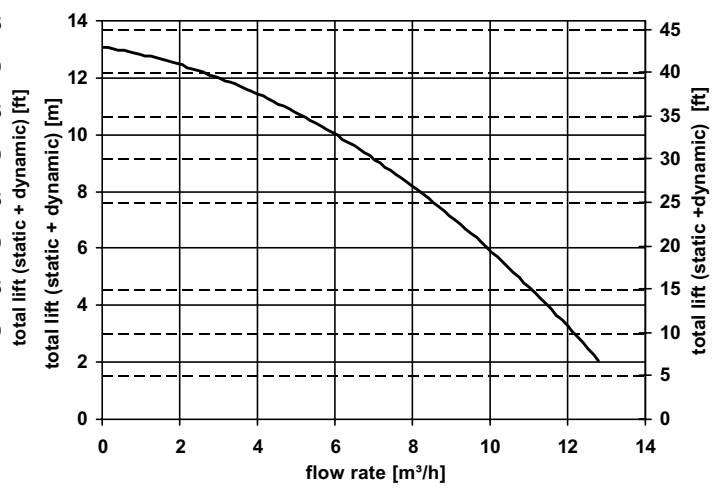
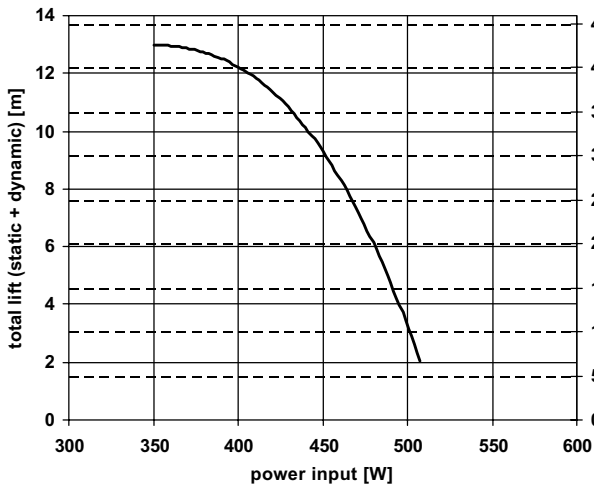
**Basis Of Calculation:** The power output of the solar generator is reduced by 17 % (degradation caused by ageing, dust, temperature influences etc. is taken into account). 10 sun hours per day

| total lift<br>(static+ dynamic)<br>[m / ft] | Solar-Generator<br>[Wp] | irradiation<br>[KWh/m²/day] | Solar-Generator none tracked |                     |                       |          | Solar-Generator singleaxis tracked |                       |      |
|---|-------------------------|-----------------------------|------------------------------|---------------------|-----------------------|----------|------------------------------------|-----------------------|------|
|   |                         |                             | flow rate                    |                     | flow rate             |          | flow rate                          |                       |      |
|   |                         |                             | [m³/day]                     | [US gal/day x 1000] | [Imp. gal/day x 1000] | [m³/day] | [US gal/day x 1000]                | [Imp. gal/day x 1000] |      |
| 2 / 6,5                                     | 340                     | 4.5                         | 54.0                         | 14.3                | 11.9                  | 76.7     | 20.3                               | 16.9                  |      |
|   |                         | 6.0                         | 70.0                         | 18.5                | 15.4                  | 105.0    | 27.7                               | 23.1                  |      |
|   |                         | 7.5                         | 82.0                         | 21.7                | 18.0                  | 131.2    | 34.7                               | 28.9                  |      |
|   | 400                     | 4.5                         | 61.0                         | 16.1                | 13.4                  | 86.6     | 22.9                               | 19.1                  |      |
|   |                         | 6.0                         | 78.0                         | 20.6                | 17.2                  | 117.0    | 30.9                               | 25.7                  |      |
|   |                         | 7.5                         | 92.0                         | 24.3                | 20.2                  | 147.2    | 38.9                               | 32.4                  |      |
|   | 480                     | 4.5                         | 71.0                         | 18.8                | 15.6                  | 100.8    | 26.6                               | 22.2                  |      |
|   |                         | 6.0                         | 90.0                         | 23.8                | 19.8                  | 135.0    | 35.7                               | 29.7                  |      |
|   |                         | 7.5                         | 105.0                        | 27.7                | 23.1                  | 168.0    | 44.4                               | 37.0                  |      |
|   | 600                     | 4.5                         | 85.0                         | 22.5                | 18.7                  | 120.7    | 31.9                               | 26.6                  |      |
|   |                         | 6.0                         | 105.0                        | 27.7                | 23.1                  | 157.5    | 41.6                               | 34.6                  |      |
|   |                         | 7.5                         | 120.0                        | 31.7                | 26.4                  | 192.0    | 50.7                               | 42.2                  |      |
|   | 720                     | 4.5                         | 95.0                         | 25.1                | 20.9                  | 134.9    | 35.6                               | 29.7                  |      |
|   |                         | 6.0                         | 117.0                        | 30.9                | 25.7                  | 175.5    | 46.4                               | 38.6                  |      |
|   |                         | 7.5                         | 129.0                        | 34.1                | 28.4                  | 206.4    | 54.5                               | 45.4                  |      |
|   | 4 / 13                  | 340                         | 4.5                          | 27.0                | 7.1                   | 5.9      | 38.3                               | 10.1                  | 8.4  |
|   |                         |                             | 6.0                          | 43.0                | 11.4                  | 9.5      | 64.5                               | 17.0                  | 14.2 |
|   |                         |                             | 7.5                          | 56.0                | 14.8                  | 12.3     | 89.6                               | 23.7                  | 19.7 |
| 400   |                         | 4.5                         | 36.0                         | 9.5                 | 7.9                   | 51.1     | 13.5                               | 11.2                  |      |
|   |                         | 6.0                         | 52.0                         | 13.7                | 11.4                  | 78.0     | 20.6                               | 17.2                  |      |
|   |                         | 7.5                         | 67.0                         | 17.7                | 14.7                  | 107.2    | 28.3                               | 23.6                  |      |
| 480   |                         | 4.5                         | 46.0                         | 12.2                | 10.1                  | 65.3     | 17.3                               | 14.4                  |      |
|   |                         | 6.0                         | 65.0                         | 17.2                | 14.3                  | 97.5     | 25.8                               | 21.4                  |      |
|   |                         | 7.5                         | 80.0                         | 21.1                | 17.6                  | 128.0    | 33.8                               | 28.2                  |      |
| 600   |                         | 4.5                         | 60.0                         | 15.9                | 13.2                  | 85.2     | 22.5                               | 18.7                  |      |
|   |                         | 6.0                         | 80.0                         | 21.1                | 17.6                  | 120.0    | 31.7                               | 26.4                  |      |
|   |                         | 7.5                         | 97.0                         | 25.6                | 21.3                  | 155.2    | 41.0                               | 34.1                  |      |
| 720   |                         | 4.5                         | 73.0                         | 19.3                | 16.1                  | 103.7    | 27.4                               | 22.8                  |      |
|   |                         | 6.0                         | 94.0                         | 24.8                | 20.7                  | 141.0    | 37.3                               | 31.0                  |      |
|   |                         | 7.5                         | 108.0                        | 28.5                | 23.8                  | 172.8    | 45.7                               | 38.0                  |      |
| 6 / 20                                      |                         | 340                         | 4.5                          | 10.0                | 2.6                   | 2.2      | 14.2                               | 3.8                   | 3.1  |
|   |                         |                             | 6.0                          | 24.0                | 6.3                   | 5.3      | 36.0                               | 9.5                   | 7.9  |
|   |                         |                             | 7.5                          | 36.0                | 9.5                   | 7.9      | 57.6                               | 15.2                  | 12.7 |
|   | 400                     | 4.5                         | 17.0                         | 4.5                 | 3.7                   | 24.1     | 6.4                                | 5.3                   |      |
|   |                         | 6.0                         | 33.0                         | 8.7                 | 7.3                   | 49.5     | 13.1                               | 10.9                  |      |
|   |                         | 7.5                         | 47.0                         | 12.4                | 10.3                  | 75.2     | 19.9                               | 16.5                  |      |
|   | 480                     | 4.5                         | 26.0                         | 6.9                 | 5.7                   | 36.9     | 9.8                                | 8.1                   |      |
|   |                         | 6.0                         | 44.0                         | 11.6                | 9.7                   | 66.0     | 17.4                               | 14.5                  |      |
|   |                         | 7.5                         | 60.0                         | 15.9                | 13.2                  | 96.0     | 25.4                               | 21.1                  |      |
|   | 600                     | 4.5                         | 40.0                         | 10.6                | 8.8                   | 56.8     | 15.0                               | 12.5                  |      |
|   |                         | 6.0                         | 61.0                         | 16.1                | 13.4                  | 91.5     | 24.2                               | 20.1                  |      |
|   |                         | 7.5                         | 77.0                         | 20.3                | 16.9                  | 123.2    | 32.5                               | 27.1                  |      |
|   | 720                     | 4.5                         | 52.0                         | 13.7                | 11.4                  | 73.8     | 19.5                               | 16.2                  |      |
|   |                         | 6.0                         | 75.0                         | 19.8                | 16.5                  | 112.5    | 29.7                               | 24.7                  |      |
|   |                         | 7.5                         | 91.0                         | 24.0                | 20.0                  | 145.6    | 38.5                               | 32.0                  |      |
|   | 8 / 26                  | 340                         | 4.5                          |                     |                       |          |                                    |                       |      |
|   |                         |                             | 6.0                          | 6.0                 | 1.6                   | 1.3      | 9.0                                | 2.4                   | 2.0  |
|   |                         |                             | 7.5                          | 17.0                | 4.5                   | 3.7      | 27.2                               | 7.2                   | 6.0  |
| 400   |                         | 4.5                         | 3.0                          | 0.8                 | 0.7                   | 4.3      | 1.1                                | 0.9                   |      |
|   |                         | 6.0                         | 13.0                         | 3.4                 | 2.9                   | 19.5     | 5.2                                | 4.3                   |      |
|   |                         | 7.5                         | 26.0                         | 6.9                 | 5.7                   | 41.6     | 11.0                               | 9.2                   |      |
| 480   |                         | 4.5                         | 10.0                         | 2.6                 | 2.2                   | 14.2     | 3.8                                | 3.1                   |      |
|   |                         | 6.0                         | 24.0                         | 6.3                 | 5.3                   | 36.0     | 9.5                                | 7.9                   |      |
|   |                         | 7.5                         | 38.0                         | 10.0                | 8.4                   | 60.8     | 16.1                               | 13.4                  |      |
| 600   |                         | 4.5                         | 20.0                         | 5.3                 | 4.4                   | 28.4     | 7.5                                | 6.2                   |      |
|   |                         | 6.0                         | 39.0                         | 10.3                | 8.6                   | 58.5     | 15.5                               | 12.9                  |      |
|   |                         | 7.5                         | 56.0                         | 14.8                | 12.3                  | 89.6     | 23.7                               | 19.7                  |      |
| 720   |                         | 4.5                         | 31.0                         | 8.2                 | 6.8                   | 44.0     | 11.6                               | 9.7                   |      |
|   |                         | 6.0                         | 53.0                         | 14.0                | 11.7                  | 79.5     | 21.0                               | 17.5                  |      |
|   |                         | 7.5                         | 70.0                         | 18.5                | 15.4                  | 112.0    | 29.6                               | 24.6                  |      |
| 10 / 33                                     |                         | 600                         | 4.5                          | 7.0                 | 1.8                   | 1.5      | 11.2                               | 3.0                   | 2.5  |
|   |                         |                             | 6.0                          | 23.0                | 6.1                   | 5.1      | 36.8                               | 9.7                   | 8.1  |
|   |                         |                             | 7.5                          | 39.0                | 10.3                  | 8.6      | 62.4                               | 16.5                  | 13.7 |
|   | 720                     | 4.5                         | 16.0                         | 4.2                 | 3.5                   | 25.6     | 6.8                                | 5.6                   |      |
|   |                         | 6.0                         | 36.0                         | 9.5                 | 7.9                   | 57.6     | 15.2                               | 12.7                  |      |
|   |                         | 7.5                         | 54.0                         | 14.3                | 11.9                  | 86.4     | 22.8                               | 19.0                  |      |
| 12 / 39                                     | 600                     | 4.5                         | 1.0                          | 0.3                 | 0.2                   | 1.6      | 0.4                                | 0.4                   |      |
|   |                         | 6.0                         | 10.0                         | 2.6                 | 2.2                   | 16.0     | 4.2                                | 3.5                   |      |
|   |                         | 7.5                         | 24.0                         | 6.3                 | 5.3                   | 38.4     | 10.1                               | 8.4                   |      |
|   | 720                     | 4.5                         | 6.0                          | 1.6                 | 1.3                   | 9.6      | 2.5                                | 2.1                   |      |
|   |                         | 6.0                         | 20.0                         | 5.3                 | 4.4                   | 32.0     | 8.5                                | 7.0                   |      |
|   |                         | 7.5                         | 37.0                         | 9.8                 | 8.1                   | 59.2     | 15.6                               | 13.0                  |      |
|   | 900                     | 4.5                         | 17.0                         | 4.5                 | 3.7                   | 27.2     | 7.2                                | 6.0                   |      |
|   |                         | 6.0                         | 37.0                         | 9.8                 | 8.1                   | 59.2     | 15.6                               | 13.0                  |      |
|   |                         | 7.5                         | 50.0                         | 13.2                | 11.0                  | 80.0     | 21.1                               | 17.6                  |      |
|   | 14 / 46                 | 600                         | 4.5                          |                     |                       |          |                                    |                       |      |
|   |                         |                             | 6.0                          | 3.0                 | 0.8                   | 0.7      | 4.8                                | 1.3                   | 1.1  |
|   |                         |                             | 7.5                          | 8.0                 | 2.1                   | 1.8      | 12.8                               | 3.4                   | 2.8  |
| 720   |                         | 4.5                         |                              |                     |                       |          |                                    |                       |      |
|   |                         | 6.0                         | 7.0                          | 1.8                 | 1.5                   | 11.2     | 3.0                                | 2.5                   |      |
|   |                         | 7.5                         | 21.0                         | 5.5                 | 4.6                   | 33.6     | 8.9                                | 7.4                   |      |
| 900   |                         | 4.5                         | 5.0                          | 1.3                 | 1.1                   | 8.0      | 2.1                                | 1.8                   |      |
|   |                         | 6.0                         | 21.0                         | 5.5                 | 4.6                   | 33.6     | 8.9                                | 7.4                   |      |
|   |                         | 7.5                         | 33.0                         | 8.7                 | 7.3                   | 52.8     | 13.9                               | 11.6                  |      |

**Chart: Solar Operation** solar generator: nominal voltage 48-72 V DC, open circuit voltage max. 150 V DC



**Charts: Battery Operation** battery, DC power supply: nominal voltage 48 V



| total lift<br>(static + dynamic) |      | flow rate |            |              | power<br>input | current<br>input |
|----------------------------------|------|-----------|------------|--------------|----------------|------------------|
| [m]                              | [ft] | [m³/h]    | [US gal/h] | [Imp. gal/h] | [W]            | [A]              |
| 2                                | 6.6  | 12.8      | 3382       | 2816         | 507            | 10.6             |
| 3                                | 9.8  | 12.3      | 3250       | 2706         | 502            | 10.5             |
| 4                                | 13.1 | 11.4      | 3022       | 2516         | 496            | 10.3             |
| 5                                | 16.4 | 10.6      | 2801       | 2332         | 489            | 10.2             |
| 6                                | 19.7 | 9.9       | 2616       | 2178         | 480            | 10.0             |
| 7                                | 23.0 | 9.2       | 2431       | 2024         | 471            | 9.8              |
| 8                                | 26.2 | 8.2       | 2166       | 1804         | 464            | 9.7              |
| 9                                | 29.5 | 7.2       | 1902       | 1584         | 454            | 9.5              |
| 10                               | 32.8 | 6.0       | 1585       | 1320         | 443            | 9.2              |
| 11                               | 36.1 | 4.8       | 1268       | 1056         | 426            | 8.9              |
| 12                               | 39.4 | 3.0       | 793        | 660          | 406            | 8.5              |
| 13                               | 42.7 | 0.0       | 0          | 0            | 350            | 7.3              |

## Technical Data

| PS600 BADU Top 12                   | Solar operation   | Battery operation                              |
|-------------------------------------|---|--|
| flow rate, max.                     | 15 m <sup>3</sup> /h / 4,000 US Gal./h  | 13 m <sup>3</sup> /h / 3,400 US Gal./h         |
| lift, max.                          | 14 m / 46 ft  | 13 m / 43 ft                                   |
| ambient temperature                 | -30° C to +45° C  |  |
| <b>Controller</b>                   |   |  |
| input voltage                       | solar generator:<br>nominal voltage 48 to 72 V DC<br>open circuit voltage max. 150 V DC | battery, DC source:<br>nominal voltage 48 V DC |
| type of enclosure                   | IP 54   |  |
| dimensions (net/packing)            | 395 x 175 x 165 mm / 450 x 250 x 240 mm (0,0270 m <sup>3</sup> )                        |  |
| weight (nett/gross)                 | 4.5 kg / 5.3 kg   |  |
| <b>Motor</b>                        |   |  |
|                                     | ECDRIVE 600 BADU Top  |  |
| power input, max.                   | 600 W   |  |
| type of enclosure                   | IP X4   |  |
| class of insulation                 | F   |  |
| <b>Pump end</b>                     |   |  |
|                                     | BADU Top 12 (manufacturer Speck Pumps)  |  |
| suction, positive inlet lift, max.  | 3 m   |  |
| casing pressure, max.               | 2.5 bar   |  |
| water temperature, max.             | 60° C   |  |
| <b>Pump unit (motor + pump end)</b> |   |  |
| dimensions (net/packing)            | see drawing below / 520 x 220 x 350 mm (0,0400m <sup>3</sup> )                          |  |
| weight (net/gross)                  | 8.7 kg / 9.7 kg   |  |

## Dimensions For Pump Unit (Motor + Pump End)

