

# PS1800 CS-36-1

## Solar-operated Centrifugal Surface Pump

### Characteristics

- flow rate up to 36 m<sup>3</sup>/h
- excellent serviceability
- maintenance-free DC motor thanks to brushless technology
- excellent efficiency
- short Return on Investment (ROI) cycle
- lower Total Cost of Ownership (TCO)

### Application

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

### Warranty

- warranty: 2 years  
Details according to warranty issued by LORENTZ

### Components

#### Pump End PE CS-36-1

- centrifugal 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. 6 l
- strainer basket mesh size approx. 3.2 × 2.6 mm
- material used for pump end
  - pump casing, flange: PP GF 30
  - gland housing: PP TV 40
  - diffuser: PP GF 30
  - strainer basket: PP
  - impeller: PPE GF 30
  - lid: PC, transparent
- mechanical seal: carbon / ceramic / NBR
- bolts, nuts, washers: stainless steel (AISI 304)

#### Motor ECDRIVE 1800 CS

- brushless, maintenance-free DC motor
- no electronics in the motor
- premium materials

#### Controller PS1800

- 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)



picture may differ from actual product

**System Sizing Table: Solar-direct Operation**

PV generator: max. power voltage (Vmp)\*: > 102VDC (> 110VDC for TDH > 14m), open circuit voltage (Voc): max. 200VDC, nominal voltage 72–96VDC (> 84–96VDC for TDH > 14m)

TDH total dynamic head [m] / [ft]	PV generator [Wp]	irradiation [kWh/m <sup>2</sup> /day]	flow rate					
			PV generator not tracked			PV generator single-axis tracked		
			[m <sup>3</sup> /day]	[1,000 US Gal./day]	[1,000 Imp. Gal./day]	[m <sup>3</sup> /day]	[1,000 US Gal./day]	[1,000 Imp. Gal./day]
2m 6.5ft	560	4.5	144	38.0	31.7	173	45.7	38.1
		6.0	180	47.6	39.6	217	57.3	47.7
		7.5	209	55.2	46.0	253	66.8	55.7
	700	4.5	171	45.2	37.6	200	52.8	44.0
		6.0	207	54.7	45.5	245	64.7	53.9
		7.5	237	62.6	52.1	280	74.0	61.6
	960	4.5	210	55.5	46.2	239	63.1	52.6
		6.0	247	65.3	54.3	284	75.0	62.5
		7.5	278	73.4	61.2	322	85.1	70.8
	1,400	4.5	258	68.2	56.8	287	75.8	63.1
		6.0	297	78.5	65.3	335	88.5	73.7
		7.5	329	86.9	72.4	374	98.8	82.3
1,920	4.5	300	79.3	66.0	330	87.2	72.6	
	6.0	338	89.3	74.4	376	99.3	82.7	
	7.5	362	95.6	79.6	402	106.2	88.4	
4m 13ft	560	4.5	81	21.4	17.8	103	27.2	22.7
		6.0	118	31.2	26.0	152	40.2	33.4
		7.5	146	38.6	32.1	196	51.8	43.1
	700	4.5	110	29.1	24.2	131	34.6	28.8
		6.0	146	38.6	32.1	186	49.1	40.9
		7.5	175	46.2	38.5	229	60.5	50.4
	960	4.5	149	39.4	32.8	178	47.0	39.2
		6.0	186	49.1	40.9	233	61.6	51.3
		7.5	224	59.2	49.3	277	73.2	60.9
	1,400	4.5	199	52.6	43.8	236	62.4	51.9
		6.0	246	65.0	54.1	292	77.1	64.2
		7.5	284	75.0	62.5	337	89.0	74.1
1,920	4.5	249	65.8	54.8	286	75.6	62.9	
	6.0	295	77.9	64.9	340	89.8	74.8	
	7.5	323	85.3	71.1	369	97.5	81.2	
6m 20ft	560	4.5	32	8.5	7.0	45	11.9	9.9
		6.0	67	17.7	14.7	91	24.0	20.0
		7.5	95	25.1	20.9	138	36.5	30.4
	700	4.5	59	15.6	13.0	77	20.3	16.9
		6.0	94	24.8	20.7	125	33.0	27.5
		7.5	127	33.6	27.9	177	46.8	38.9
	960	4.5	99	26.2	21.8	123	32.5	27.1
		6.0	141	37.3	31.0	181	47.8	39.8
		7.5	173	45.7	38.1	232	61.3	51.0
	1,400	4.5	154	40.7	33.9	183	48.3	40.3
		6.0	196	51.8	43.1	249	65.8	54.8
		7.5	238	62.9	52.4	300	79.3	66.0
1,920	4.5	200	52.8	44.0	241	63.7	53.0	
	6.0	251	66.3	55.2	303	80.1	66.7	
	7.5	283	74.8	62.3	337	89.0	74.1	

TDH total dynamic head [m] / [ft]	PV generator [Wp]	irradiation [kWh/m <sup>2</sup> /day]	flow rate					
			PV generator not tracked			PV generator single-axis tracked		
			[m <sup>3</sup> /day]	[1,000 US Gal./day]	[1,000 Imp. Gal./day]	[m <sup>3</sup> /day]	[1,000 US Gal./day]	[1,000 Imp. Gal./day]
8m 26ft	700	4.5	22	5.8	4.8	30	7.9	6.6
		6.0	55	14.5	12.1	76	20.1	16.7
		7.5	81	21.4	17.8	123	32.5	27.1
	960	4.5	58	15.3	12.8	76	20.1	16.7
		6.0	96	25.4	21.1	128	33.8	28.2
		7.5	134	35.4	29.5	187	49.4	41.1
	1,400	4.5	111	29.3	24.4	138	36.5	30.4
		6.0	159	42.0	35.0	206	54.4	45.3
		7.5	196	51.8	43.1	263	69.5	57.9
	1,920	4.5	164	43.3	36.1	196	51.8	43.1
		6.0	210	55.5	46.2	267	70.5	58.7
		7.5	243	64.2	53.5	304	80.3	66.9
2,100	4.5	179	47.3	39.4	214	56.5	47.1	
	6.0	221	58.4	48.6	278	73.4	61.2	
	7.5	253	66.8	55.7	309	81.6	68.0	
10m 33ft	700	4.5	0.21	0.06	0.05	0.21	0.06	0.05
		6.0	22	5.8	4.8	33	8.7	7.3
		7.5	48	12.7	10.6	74	19.6	16.3
	960	4.5	26	6.9	5.7	36	9.5	7.9
		6.0	63	16.6	13.9	87	23.0	19.1
		7.5	94	24.8	20.7	142	37.5	31.2
	1,400	4.5	76	20.1	16.7	99	26.2	21.8
		6.0	122	32.2	26.8	162	42.8	35.6
		7.5	163	43.1	35.9	226	59.7	49.7
	1,920	4.5	128	33.8	28.2	157	41.5	34.5
		6.0	179	47.3	39.4	230	60.8	50.6
		7.5	206	54.4	45.3	271	71.6	59.6
2,100	4.5	144	38.0	31.7	174	46.0	38.3	
	6.0	191	50.5	42.0	243	64.2	53.5	
	7.5	214	56.5	47.1	277	73.2	60.9	
12m 39ft	1,400	4.5	45	11.9	9.9	60	15.9	13.2
		6.0	91	24.0	20.0	123	32.5	27.1
		7.5	130	34.3	28.6	189	49.9	41.6
	1,920	4.5	95	25.1	20.9	124	32.8	27.3
		6.0	147	38.8	32.3	193	51.0	42.5
		7.5	177	46.8	38.9	238	62.9	52.4
	2,100	4.5	109	28.8	24.0	142	37.5	31.2
		6.0	161	42.5	35.4	207	54.7	45.5
		7.5	185	48.9	40.7	244	64.5	53.7

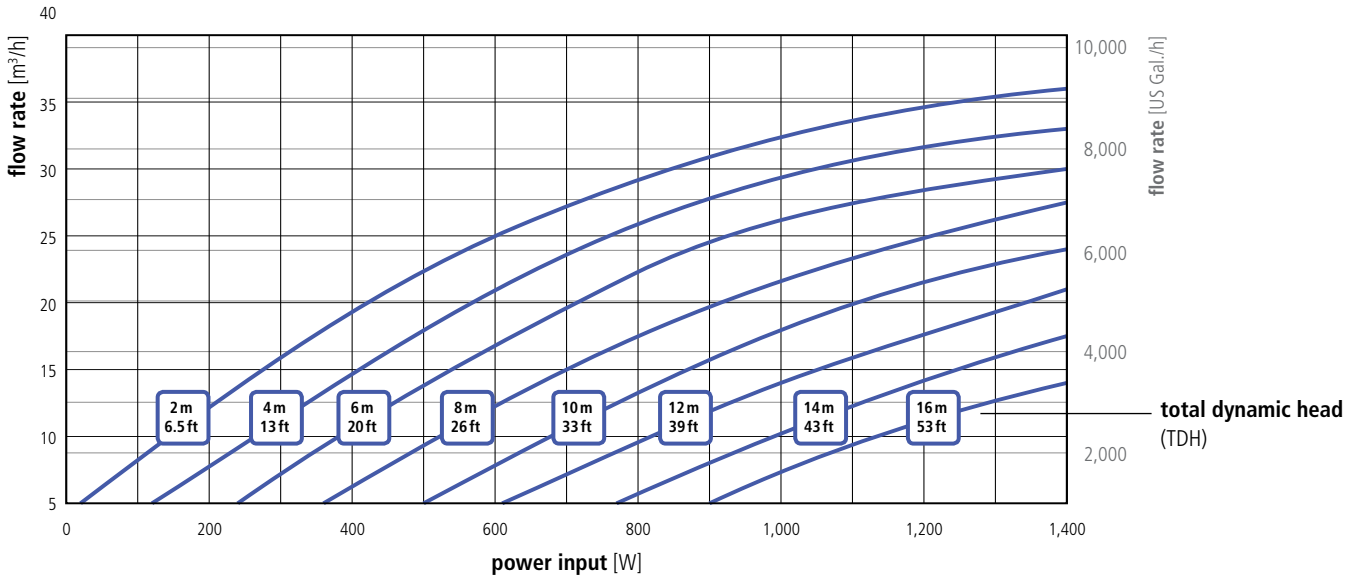
**Basis of calculation**

The power output of the PV generator is reduced by 17% (degradation caused by ageing, dust, temperature influences etc. is taken into account).

\*) PV modules at standard test condition: AM = 1.5, E = 1,000W/m<sup>2</sup>, cell temperature: 25 °C

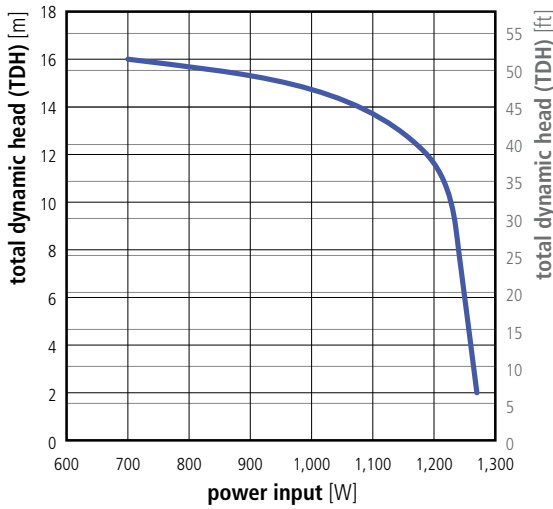
**Chart: Solar-direct Operation**

PV generator: max. power voltage (Vmp)\*: > 102VDC (> 110VDC for TDH > 14m), open circuit voltage (Voc): max. 200VDC, nominal voltage 72–96VDC (> 84–96VDC for TDH > 14m)

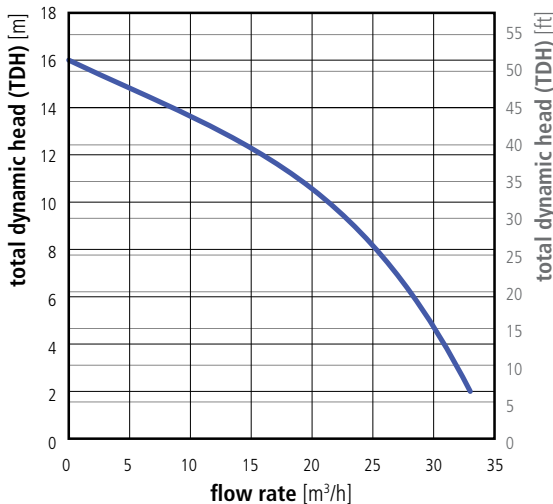


**Chart: Battery Operation**

battery, DC power supply: nominal voltage 96VDC



total dynamic head (TDH)		flow rate			power input	current input
[m]	[ft]	[m³/h]	[US Gal./h]	[Imp. Gal./h]	[W]	[A]
2	6.6	33	8,720	7,260	1,270	13.2
4	13	31	8,190	6,820	1,260	13.1
6	20	28.5	7,530	6,270	1,250	13.0
8	26	25.4	6,710	5,590	1,240	12.9
10	33	21.4	5,650	4,710	1,230	12.8
12	39	16.4	4,330	3,610	1,200	12.5
14	46	8.1	2,140	1,780	1,180	12.3
16	53	0	0	0	700	7.3



\*) PV modules at standard test condition: AM = 1.5, E = 1,000W/m², cell temperature: 25 °C

**Technical Data PS1800-CS36-1**

article #2924

		solar operation	battery operation
<b>System</b>			
max. flow rate	[m³/h   US gal./h]	36   9,500	34   9,000
max. total dynamic head (TDH)	[m   ft]	16   53	12   40
ambient temperature			
storage	[°C]	-30 to +55	
operation	[°C]	0 to +55	

**Components**

**Controller PS1800**

input voltage			
max. power input (Vmp)*	[VDC]	> 102 > 110 for TDH > 14 m	
open circuit voltage (Voc)	[VDC]	max. 200	
nominal voltage	[VDC]	72-96 > 84-96 for TDH > 14 m	96
type of enclosure			IP 54
dimensions: net, packing (total)	[cm]	39.5 × 17.5 × 16.5, 45 × 25 × 24 (0.027 m³)	
weight: net, gross	[kg]	4.5, 5.3	

**motor ECDRIVE 1800 CS**

type of enclosure			IP X4
class of insulation			F

**pump end PE CS-36-1**

max. suction/positive inlet head	[m   ft]	3   10
max. casing pressure	[bar]	2.5
max. water temperature	[°C]	+60

**pump unit PU CS-36-1 (motor + pump end)**

dimensions: net, packing (total)	[cm]	see drawing below, 80 × 28 × 44 (0.1 m³)
weight: net, gross	[kg]	20.5, 22.0

\*) PV modules at standard test condition: AM = 1.5, E = 1,000W/m², cell temperature: 25 °C

**Dimensions For Pump Unit (Motor + Pump End) | mm [in]**

