

Solar or battery-operated Submersible Pump System 4” Centrifugal (C) Pump Unit

Submersible solar pumps | Technical data

Lorentz PS150 Centric

| Performance

- | Lift up to 75 feet
- | Flow rate up to 21.6 GPM
- | Simple installation
- | Maintenance-free
- | High reliability and life expectancy
- | Cost-effective pumping solution

| Application

- | Livestock watering
- | Dugout floating pump
- | Pond management
- | Irrigation systems

| PS150 Controller

- | PV direct or battery powered 12-24VDC operation
- | Electronics all above ground
- | Two Separate control inputs for dry run protection and tank float switch
- | Automatic reset after low water protection engages
- | Protected against reverse polarity, overload and temperature
- | Speed control, maximum pump speed adjustable to reduce flow rate to approximately 30%
- | Solar operation: integrated MPPT (Maximum Power Point Tracking)
- | Battery operation: low voltage disconnect and restart after battery has recovered
- | 12/24-20Amp Battery charger included.
- | Battery high run function. Pump only runs when charge current from solar array is available. Cycling of batteries is avoided and lifetime greatly increased.

| Pump End (PE)

- | High life expectancy
- | Freeze protection optional, water drains back to source.
- | Dry running protection (optional)
- | Material: stainless steel (AISI 316), rubber



PS150 Centric C-SJ5-8 Controller,
motor and pump

SOLAR PUMPING SYSTEM

Example: PS150 Centric with
Float System installed.



| Motor EC Drive

- | Brushless DC motor, 3-Phase (PWM)
- | No electronics inside motor
- | Water filled
- | IP 68, pressure balanced, max. submersion unlimited
- | Dynamic slide bearings, material: carbon/ceramic
- | Wetted material: stainless steel (AISI 316), POM, rubber, cable drinking water approved

Solar or battery-operated Submersible Pump System 4” Helical Rotor (HR) or Centrifugal (C) Pump Unit

Submersible solar pumps | Technical data

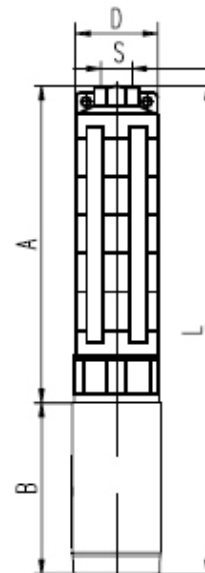
Lorentz PS150 Centric

| Pump Unit (Pu) (motor + pump end) | Dimensions | | | | | Shipping Dimensions | | | |
|--------------------------------------|------------|------|------|------|----------|---------------------|-----------------|------------|--------------|
| | L | A | B | D | S | packaging | shipping volume | net weight | gross weight |
| | [mm] | [mm] | [mm] | [mm] | | [mm] | [m³] | [kg] | [kg] |
| C-SJ5-8 | 593 | 408 | 185 | 100 | G 1 1/2" | 650X160X150 | 0,016 | 12 | 12,5 |
| Controller Type | | | | | | | | | |
| PS150-C | | | | | | 320X240X160 | 0,0123 | 1,2 | 1,8 |

Wire sizing Table Controller to Pump Motor

| Feet max. length | Meters | Pump Watts - wire size mm² / AWG | | |
|---------------------|--------|----------------------------------|------------|-----------------|
| | | 70W / 12V | 150W / 17V | 300W / 24V -30V |
| 17 | 5 | 2,5 / #14 | 2,5 / #14 | 2,5 / #14 |
| 33 | 10 | 2,5 / #10 | 4 / #10 | 4 / #10 |
| 50 | 15 | 4 / #10 | 4 / #10 | 4 / #10 |
| 65 | 20 | 4 / #10 | 6 / #10 | 6 / #10 |
| 80 | 25 | 6 / #10 | 6 / #10 | 6 / #8 |

wire sizing layout for max. 6% cable loss



Battery Sample Layout :

Lift / water req.: 50ft lift and 3000USG per day required

Solar radiation: 6kWh/m²/day say 6 peak sun hours

Pump: PS150 C-SJ5-8 pump, 3000G / (14,5x60)G/h = 3,5h pumping time

Energy req.: 3,5h X 24V X 12,5A = 1050Wh X 1,5* = 1575Wh
*(const. factor for battery systems to account for battery, charging and array losses)

Array size: 1575Wh / 6 peak sun hour day (summer) = 265Wp array is needed

Battery size: 1575Wh / 24V = 65Ah X 2* = 130Ah min. size
*(min. factor for batteries)

Choose a larger array and battery size to compensate bad weather periods.

Performance PS150 C-SJ5-8 Centrifugal Pump

| Lift | 12V Battery or 65Wp Solar direct | | | | | | 17V or 150Wp Solar direct | | | | | 24v Battery or 300Wp Solar direct, current = 12,5A | | | | 450Wp Solar direct | | Lift | | |
|------|----------------------------------|-----|-----------------|------|----------------|-------|---------------------------|----|-----------------|------|----------------|--|-----------------|------|----------------|--------------------|----------------|------|----|-----|
| | Current | | Flow Rate / min | | Shrs solar day | | Current | | Flow Rate / min | | Shrs solar day | | Flow/Rate / min | | Shrs solar day | | Shrs solar day | | | |
| | Ft | m | A | L | US G | m³ | USG | A | L | US G | m³ | USG | L | US G | m³ | USG | m³ | | | USG |
| 6,6 | 2 | 5,2 | 40 | 10,6 | 12 | 3.200 | 8 | 64 | 16,9 | 19,3 | 5.100 | 82 | 21,7 | 24,6 | 6.500 | 37 | 9.750 | 6,6 | 2 | |
| 10 | 3 | 5,3 | 36 | 9,5 | 11 | 2.900 | 8 | 61 | 16,1 | 18,2 | 4.800 | 79 | 20,9 | 23,8 | 6.300 | 36 | 9.450 | 10 | 3 | |
| 13 | 4 | 5,4 | 32 | 8,5 | 9 | 2.500 | 8,2 | 59 | 15,6 | 17,8 | 4.700 | 77 | 20,3 | 23,1 | 6.100 | 35 | 9.150 | 13 | 4 | |
| 16 | 5 | 5,3 | 26 | 6,9 | 8 | 2.100 | 8,4 | 57 | 15,1 | 17,0 | 4.500 | 75 | 19,8 | 22,3 | 5.900 | 33 | 8.850 | 16 | 5 | |
| 20 | 6 | 5,1 | 24 | 6,3 | 7 | 1.900 | 8,5 | 56 | 14,8 | 16,7 | 4.400 | 73 | 19,3 | 22,0 | 5.800 | 33 | 8.700 | 20 | 6 | |
| 23 | 7 | 4,3 | 13 | 3,4 | 4 | 1.000 | 8,6 | 53 | 14,0 | 15,9 | 4.200 | 70 | 18,5 | 20,8 | 5.500 | 31 | 8.250 | 23 | 7 | |
| 26 | 8 | | | | | | 8,7 | 50 | 13,2 | 15,1 | 4.000 | 68 | 18,0 | 20,4 | 5.400 | 31 | 8.100 | 26 | 8 | |
| 30 | 9 | | | | | | 8,8 | 46 | 12,2 | 13,6 | 3.600 | 67 | 17,7 | 20,1 | 5.300 | 30 | 7.950 | 30 | 9 | |
| 33 | 10 | | | | | | 8,6 | 44 | 11,6 | 13,2 | 3.500 | 65 | 17,2 | 19,7 | 5.200 | 30 | 7.800 | 33 | 10 | |
| 40 | 12 | | | | | | 8,5 | 37 | 9,8 | 11,0 | 2.900 | 60 | 15,9 | 18,2 | 4.800 | 27 | 7.200 | 40 | 12 | |
| 50 | 14 | | | | | | 8,4 | 26 | 6,9 | 7,9 | 2.100 | 55 | 14,5 | 16,7 | 4.400 | 25 | 6.600 | 50 | 14 | |
| | | | | | | | | | | | | 50 | 13,2 | 15,1 | 4.000 | 23 | 6.000 | 53 | 16 | |
| | | | | | | | | | | | | 42 | 11,1 | 12,5 | 3.300 | 19 | 4.950 | 66 | 20 | |
| | | | | | | | | | | | | 34 | 9,0 | 10,2 | 2.700 | 12 | 3.200 | 73 | 22 | |

Note: a solar tracker will improve daily output in summer by 40 to 50%

Note: Solar modules have less output due to high temperature, dirt, manufactures tolerances etc.

Choose a 20-30% larger array to compensate these effects.