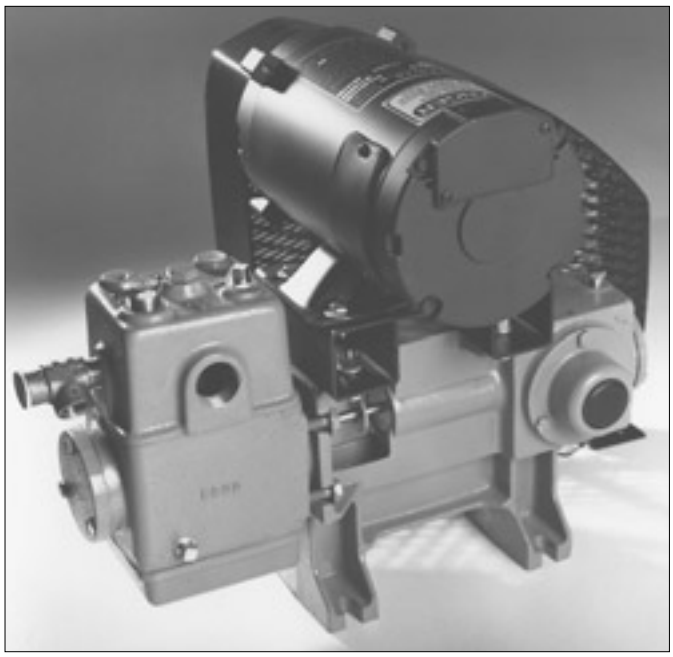
Dankoff Solar Force™ *Piston Pump*

3000 Series

Use solar-electric power for water lift or pressurizing from shallow water sources. Provides as much as 5600 Gallons per day (21,000 ltrs.) pushing as high as 230 Feet (70m) or 100 PSI (7 kg/sq. cm)

Solar Force Piston Pump draws water from a shallow well, spring, pond, river or tank. It can push water uphill and over long distances for home, village, irrigation or livestock uses. It can use power directly from a photovoltaic array, or from storage batteries, to fill a storage tank or to pressurize water.



Solar Force is . . .

Ultra-Efficient: Uses less power than ANY other pump in its range

Economical: Reduces power system cost by 25–75% compared to centrifugal or AC pumps

Solar-Direct Application: Starts pumping in low light conditions

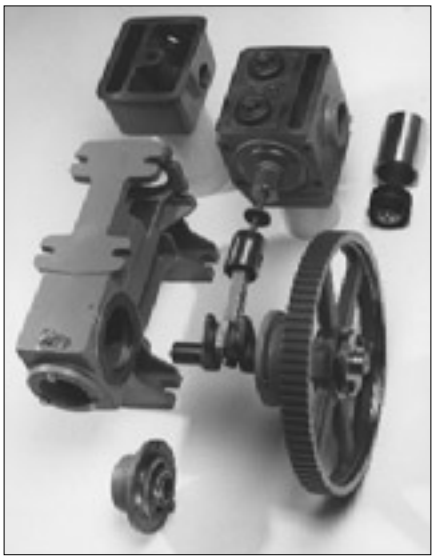
Pressurizing Application: DC version is most efficient. AC version uses a low-surge PM motor that greatly reduces starting surge, inverter size, and wire size requirements (when compared to conventional AC pumps).

Rugged and Reliable: Proven design with a 20–year life expectancy. Simple to maintain with common tools (5-10 yr. maintenance interval)

Good Tolerance for dirt and dry run

Mechanical Drive allows engine or hand-lever backup

Illustrated Instruction Manual makes it easy for anyone to install and service, with no previous experience.



Disassembled pump showing the major parts

"We have one [Solar Force] pump that serves a community of 30 people and visitors. It more than adequately meets our needs."

Brother Philip, Christ in the Desert Monastary, Abiquiu, New Mexico

"I want to tell you how happy I am with our Solar Force Piston Pump. What a workhorse! Gallon for gallon, the price of the pump is well worth it in quality and performance."

R.S., Molokai, Hawaii

"Nothing will pump more water per watt than the Solar Force—Nothing! And, it's built like a tank. I've seen similar pumps 50 years old, still working."

Larry Elliot, Solar Tech, Bonanza, Oregon

Dankoff Solar Products, Inc.
Solar Pump Manufacturing Since 1983
www.dankoffsolar.com

Dankoff Solar Force[a] Piston Pump

3000 Series

V=V oltage ¥S pecify 12, 24, 48, 90 115ac, 230ac

TotalV ertical Lift				Model # 3010 -V- B			Model # 3020 -V- B or PV			Model # 3040 -V- B or PV		
Feet	Meters	PSI	kg/ sq.cm	GPM	lpm	Watts	GPM	lpm	Watts	GPM	lpm	Watts
20	6.1	8.7	0.61	5.9	22.3	77	5.2	19.7	110	9.3	35.2	168
40	12.2	17.4	1.22	5.6	21.3	104	5.2	19.7	132	9.3	35.2	207
60	18.3	26	1.83	5.3	20.2	123	5.1	19.3	154	9.2	34.9	252
80	24.4	35	2.44	5.0	19.7	152	5.1	19.3	182	9.2	34.9	286
100	30.5	43	3.05	5.1	09.2	171	5.0	18.9	202	9.1	34.5	322
120	36.6	52	3.66	4.9	18.7	200	5.0	18.9	224	9.1	34.5	364
140	42.7	60	4.27	4.9	18.7	226	5.0	18.9	252	9.1	34.5	403
160	48.8	70	4.88	Specifications vary ± 10%			4.9	18.6	269	PV models are measured at 14, 28, or 56V (array-direct)		
180	54.9	78	5.49				4.9	18.6	280			
200	61.0	87	6.10				4.8	18.2	308			
220	67.1	96	6.71				4.7	17.8	314			

Reading the Chart

- Total Lift = Vertical Distance from surface of the water source to the pipe outlet or top of storage tank
- ¥ Model Designation: V=Voltage, B=Battery Model, PV=PV Array-Direct Model

Voltages Available

- ¥ 12, 24, 48, 90 VDC
  Note: PV-Direct full working voltage is typically 20% higher than nominal (example: 29 Volts for a 24V system)
- ¥ 115V or 230V AC, 50-60Hz

Suction Capacity

- ¥ 25 vertical feet (7.6m) at sea level. Subtract 1 foot for every 1000 ft. elevation (1m for every 1000m). Suction capacity may be further limited by intake pipe friction. Intake piping should be minimum 1'' (3010, 3020 models) or minimum 1-1/4'' (3040). For best reliability, place the pump as close to the water source as possible.

Construction

- ¥ Cast iron body
- ¥ Brass cylinder and valve seats
- ¥ Leather cup piston seals
- ¥ Neoprene valve seals
- ¥ Oil-bath crankcase with special oil included
- ¥ Gear (timing) belt drive on PV models
- ¥ Standard V-belt on B models
- ¥ Pressure relief valve
- ¥ Permanent Magnet DC Motor

System Requirements

- ¥ **Solar-DirectS ystems:** Chart indicates power (watts) required at the pump. The rated power of the PV array must exceed this number by 20% or more. A pump controller (linear current booster) is required for the pump to start and run in varying light conditions. A solar tracker may be used to increase daily yield (40-55% in summer).
- ¥ **PressurizingS ystems:** Battery power system, pressure switch, and pressure tank of minimum 60 gallon (230 liter) size (captive-air tank, available locally)

Accessories

- ¥ **FootV alve:** 1-1/4'' (required if pump is placed higher than water source)
- ¥ **Easyl nstallation Kit**: (for pressurizing applications) Heavy duty pressure switch, pressure gauge, check, drain and shut-off valves, and tank tee (manifold)
- ¥ **PressureS witch:** Heavy duty DC rated, for pressurizing systems
- ¥ **SurgeT ank:** Absorbs pulsation if long piping is required between pump outlet and tank (included with PV models)
- ¥ **Seal& Belt Kit:** Spare gaskets, rod and valve seals, two sets of piston seals, and a belt
- ¥ **Long-Term Parts Kit:** The above, plus a second belt, motor brushes, cylinder sleeve, 2 oil changes

Fittings

- ¥ Intake: 1-1/4'' female pipe thread
- ¥ Outlet: 1'' female pipe thread

Dimensions

- ¥ 22 X 13 X 16'' high (56 X 33 X 41 cm)
- ¥ With Surge Tank, total height 26'' (60 cm)
- ¥ Weight, max. 80 lbs (36 kg) Shipped in 2 or 3 parcels

Warranty

- ¥ 2 years against defects in materials and workmanship

OtherD ankoff Solar Pumps[a]

for lift and pressurizing of surface water:

Flowlight[a] Booster Pump
SolarS lowpump[a]
Solar Centrifugal[a]
Solaram[a] Surface Pump

for deep wells:

SunRise[..] Submersible

Available From:

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