

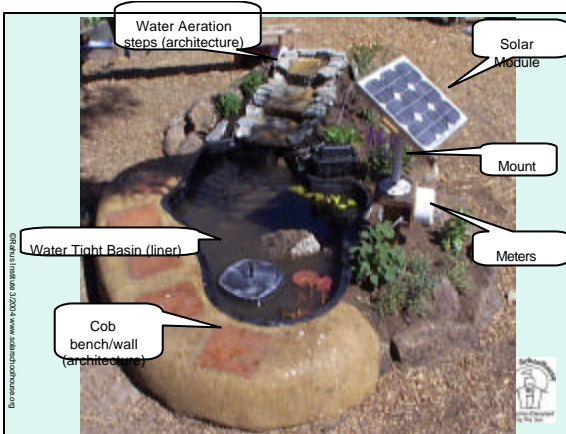
Solar Fountain Workshop Guide

Solar Fountains and Ponds



Fountain Components

- Solar Module(s)
- Solar Mounting Structure
- DC Water Pumps
- Water Basins/Ponds
- Tubing
- Nozzles
- Fountain Architecture
- Wiring Boxes
- Meters (optional)



Solar Modules: Selection Criteria

- Sizing: Provide enough watts of power to power your water pump and fountain architecture at desired rate (gpm) and height
- Pump water on overcast day: yes or no?
- Aesthetic of modules
- Configuration: One larger module or several smaller modules wired in parallel?
- Cost

Single 20 Watt Solar Module (1 amp, 18 volts)



Two @ 20 watts wired in Parallel (18 volts; 2 amps)



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One 80 watt module (18 volts; 4+ amps):
Good for overcast condition of Headlands



Four 50 watt modules to create 200 watt panel (18 volts; 10+ amps): For moving a lot of water



Water Pump

- Should be 12-24 volt DC pump: lower voltage safer
- Size based on height you want to raise water and....
- Amount of water you want (gallons per minute) to move through your fountain or pond: big splash or aeration or meditation
- Sized to fit the amount of power your solar panel can provide (again cost)

Water Pumps: Note: Ratings from memory/exp.



Rule Pump
6 gpm max
Lift: 1-6 ft.
1-2.5 amps @ 12 volts
Approx \$25

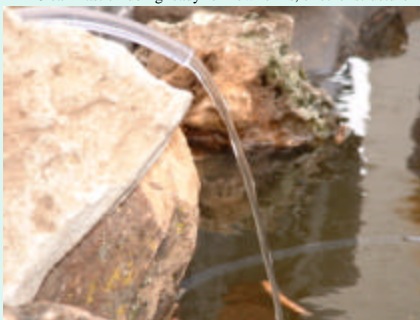


Sun Centric
Ranges up to 20-30 gpm
Can move water great distances
7-16 amps
Approx. \$800

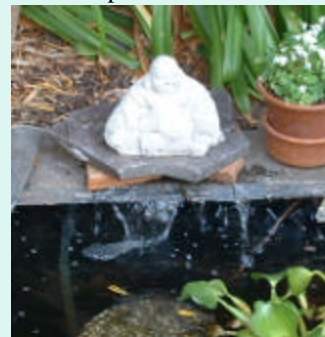


OASE Aqua Solar
1-3 gpm
Lift: 1-4 ft
12-24 volts and 0.6-1 amp
Approx. \$140.
Good for low sun, low wattage modules


PUMP FLOW: Low Flow (1-2 gpm). Used Aquasolar pump and two 10 watt solar Modules.
Clear Plastic Tubing ready for flow forms, or other structure



Pump Flow: Buddha sitting on Plastic tube:
Used Rule Pump and 20 watt solar module



PUMP FLOW: Low to moderate flow down aerating steps. Used Rule Pump and three 10 watt solar modules



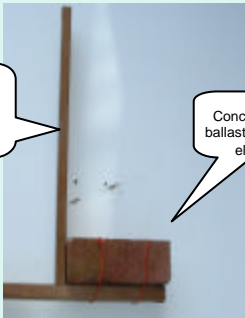
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Water Pump Installation

- Raised off of bottom to Reduce Silt in Pump; tie it to a rock or brick
- Place in some kind of screened enclosure to slow down muck/clogging factor; *must allow adequate water flow to the pump.*
- Attach to fountain structure or tubing to go down flow forms or other fountain/pond architecture...
- Tubing can be plastic and/or copper (1/2 ")
- Wire to Solar Module (directly or through meters)

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Pump Infrastructure: One example

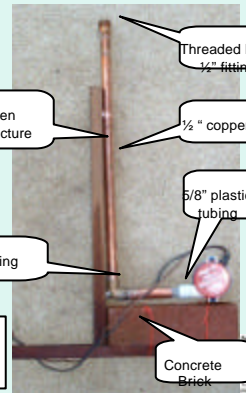


Wooden structure to support water pipe or tubing

Concrete Brick ballast and pump elevator

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Example of Pump/Tubing Set Up



Threaded Male 1/2" fitting

1/2" copper

3/8" plastic tubing

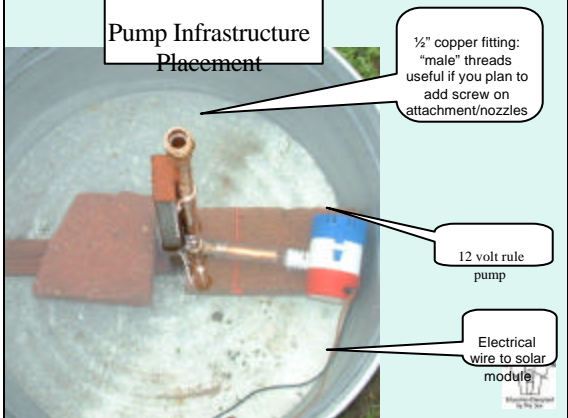
Brass 90 degree fitting with screw ears

Concrete Brick

Note: if pump needs to be protected from algae, etc, then use a longer plastic tube and incase it in a screened container

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Pump Infrastructure Placement




1/2" copper fitting: "male" threads useful if you plan to add screw on attachment/nozzles

12 volt rule pump

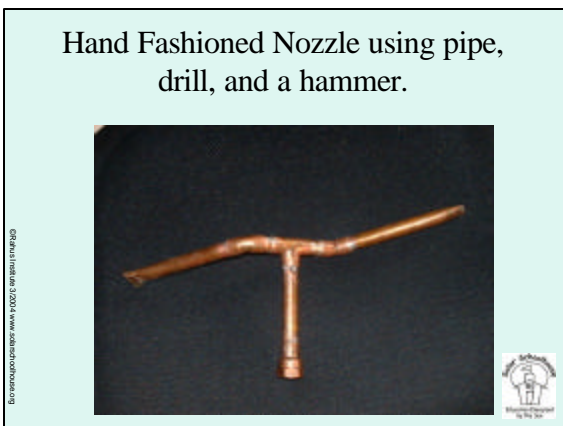
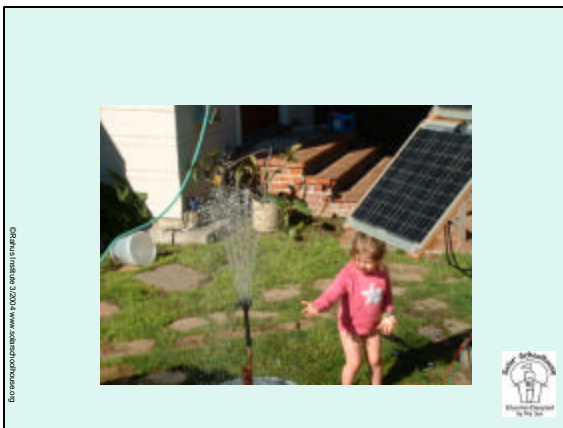
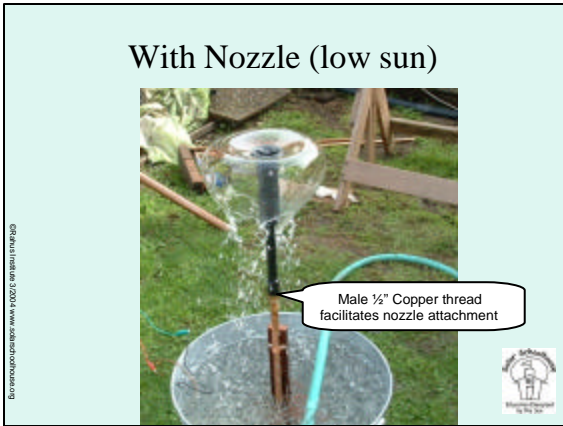
Electrical wire to solar module

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SPRAY: Copper Pipe without Nozzle



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WIRING: Two 10 modules on separate mounts wired in parallel



WIRING: Two 20 watt modules on same mount wired in parallel with option to use one module at a time for demonstrations



WIRING: Four 18 volt 3 amp modules in parallel on single pole mount: Powers large pump



WIRING: Use Weather Proof Box to connect solar modules together in parallel and to connect to water pump

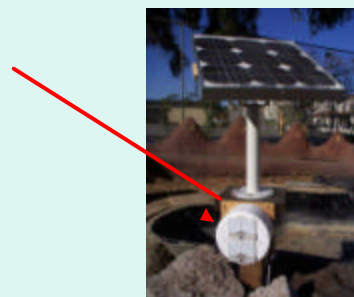


Details:

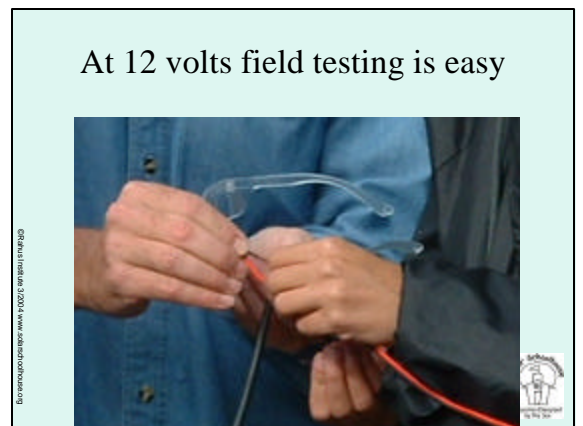
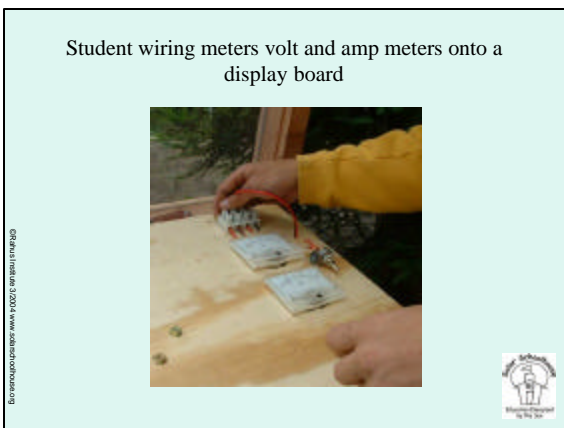
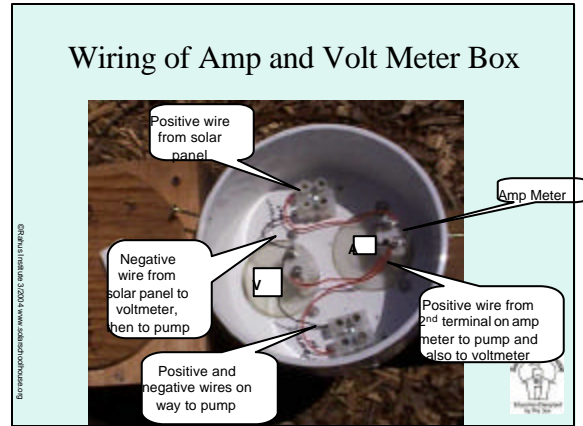
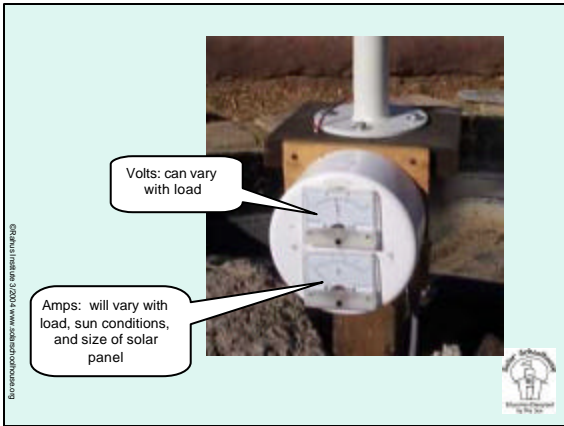
- Strain Relief
- Outdoor Junction Box
- Weather tight Connectors for Wire from Module to Module and Wire to Pump
- Thumbscrews in swivel mount
- Attachment of Box to Pole



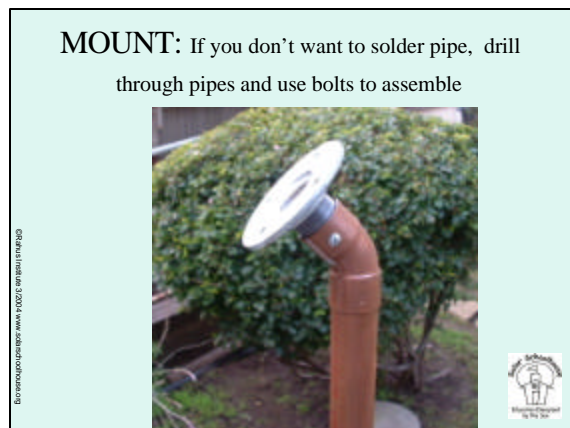
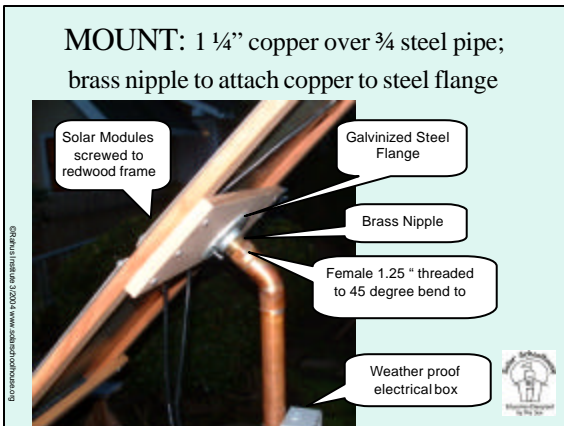
Metering Option: Add Amp or Amp and Volt meter



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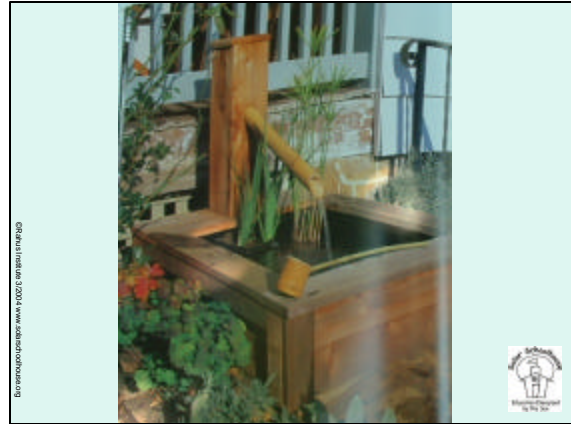


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MOUNT: Add strain relief to protect wiring



Cedar Water Garden with Bamboo Flute

