QWIK-SOLAR

D.I.Y.
SOLAR POWER

I'm John Prim and owner of Diversified Renewable Concepts.. The idea with the Qwik-Solar is to start small and affordably.

With Qwik-Solar - we focused on making it easy to build a solar mini-generator.

Teachers - feel free to use this manual in the classroom.

We also provide a Solar Pax build manual you can use to expand your solar skills and knowledge.

And we offer Solar Pax Kits - 'plug and play' solar backup generators that will meet your home power needs and more.

You learned to crawl before you walked. And you learned to walk before you started to run. The same thing applies here. Each step builds on and leads to the next step.

It's my hope you'll expand your skills and knowledge and help others benefit from solar energy.

THANK YOU!
For Going Solar!

HOW TO USE THIS MANUAL

This plan is short, straight, and simple. Page 8 can be printed out as a quick reference brochure. Use it as a check list to guide you while building your own Qwik-Solar.

While this plan is free, we do make two simple requests:

1) **Find Us on Facebook**, and become a fan by clicking the 'Like' button. You can then post pictures of your build and how you use your Qwik-Solar. Whether you do a Build Party, build it by yourself, or as a school project, please share it with us on our wall. It's exciting to see how you build and use your Qwik-Solar.

2) Conserve resources, save a tree, and help others. Please donate to Solar Ovens. Give your support in providing a means to cook food around the world using clean, free solar energy.

Now, let's get started...

- John Prim

DISCLAIMER AND WARNING: ELECTRICITY IS DANGEROUS! USE THIS PLAN AT YOUR OWN RISK. IF YOUR UNDER 18, HAVE AN ADULT HELP YOU BUILD YOUR QWIK-SOLAR.

STEP 1- BUY MATERIAL

Tools and safety equipment can be purchased at your local hardware store or home improvement center. For the solar components, click on the link below to buy online.

Safety

1. Impact resistant safety glasses
2. Ear plugs
3. Industrial vinyl gloves

Tools

4. Cordless drill/driver
5. Hacksaw or Power Chop Saw

Frame

- 1.25” PVC pipe - 10 foot length, schedule 40
- 1.25” PVC connectors, primer, and glue
- Self tapping (#8 or #10) ¾ inch screws

Components

- Sunforce 15 Watt Solar Panel
- Sunforce 7 Amp Charge Controller
- Portable Power Station

Qwik-Solar is about $275.00 to build.

Safety First!
Gather all materials together first.
Remember to always wear your safety equipment when using any tools.

STEP 2- SET WORKBENCH

It's highly recommended to build your Qwik-Solar outside. This is due to the fumes given off by the PVC primer and glue.

At the very least, keep a window or a garage door open so you don't become sick from the fumes. Use a fan to circulate the fumes to the outside.

Your workbench can be an old table, plywood on sawhorses, or even a picnic table!

The important thing to remember is to ORGANIZE your bench for the work at hand. Make sure your power tools are charged. You'll be building the frame first, then installing the solar panel and other components to it. Plan accordingly!

STEP 3- BUILD FRAME

You'll need to measure and cut the following from the pvc pipe:

- 2 pieces at 4 inches long. The red pipes on the drawing
- 9 pieces at 10 ¼ inches long. The white pipes on the drawing.
- 1 piece at 8 ¾ inches long. The blue pipe on the drawing.

You'll also need 5 'T' and 4 Elbow connectors. The connectors must be FEMALE fittings. The pipes will be inserted into the connectors. Dry fit all your pieces together first. Once you've tested for fit, then take it apart and begin priming the ends of the pipe.

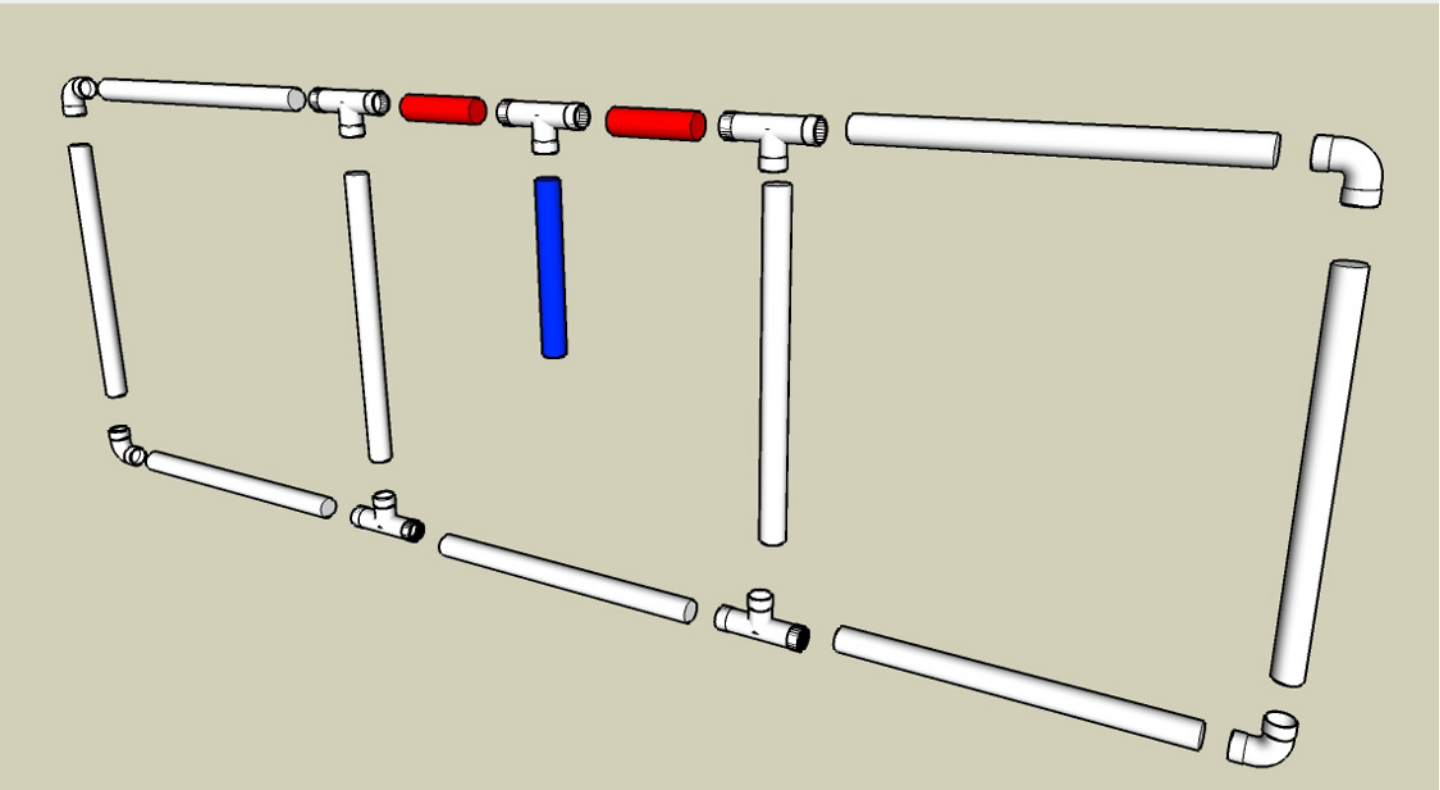
ONLY ONE SIDE OF EACH 4 inch pipe will be primed. The UNPRIMED ends are inserted into the center 'T'. It becomes the pivot for your 8 ¾ inch leg. Only one end of the 8¾ inch leg is primed and glued.

Begin gluing the ends and fitting the parts together. Start from the inside and work your way outward. The glue can dry quickly. Hold it flat against the table after each piece is glued. You want a straight frame to install your solar panel on.

Remember to wear your safety glasses and hearing protection when cutting the pipe. Wear gloves when gluing. Always glue the parts together in a well ventilated area.

Take a look at our YouTube video: How To Build a Qwik-Solar

Watch it as many times as you need to guide you in putting together your frame.



QWIK - SOLAR FRAME
PART ASSEMBLY

STEP 4- INSTALL COMPONENTS

Begin unpacking the components from their boxes. Take an inventory of the wiring for each component.

BEFORE COMPONENT INSTALL - READ THE MANUALS
Become familiar with each item & how it works before installing.

Use the ***self tapping*** screws to attach the panel to the frame. Two screws to each end of the panel.

Note: Different 15 watt panels have tabs - which should still work with this frame.

Use your drill driver and secure a self tapping screw into each hold down hole. Your panel is now secure to the frame.

Cover the panel and lay it face down. Align your 7 amp charge controller on the center of the middle pivot 'T'. Secure it with a single self tapping screw at the top of the controller.

Component install on the frame is complete. Now we have to wire it all together.

STEP 5- WIRE COMPONENTS

Wiring your Qwik-Solar is easy. The charge controller has three wires already marked. One each for 'battery', 'solar', and 'load'.

First, use the electrical tape to isolate the 'load' wire. We won't be using it. Bend back the red load wire and tape it off until you can't see it. Then do the same for the black load wire.

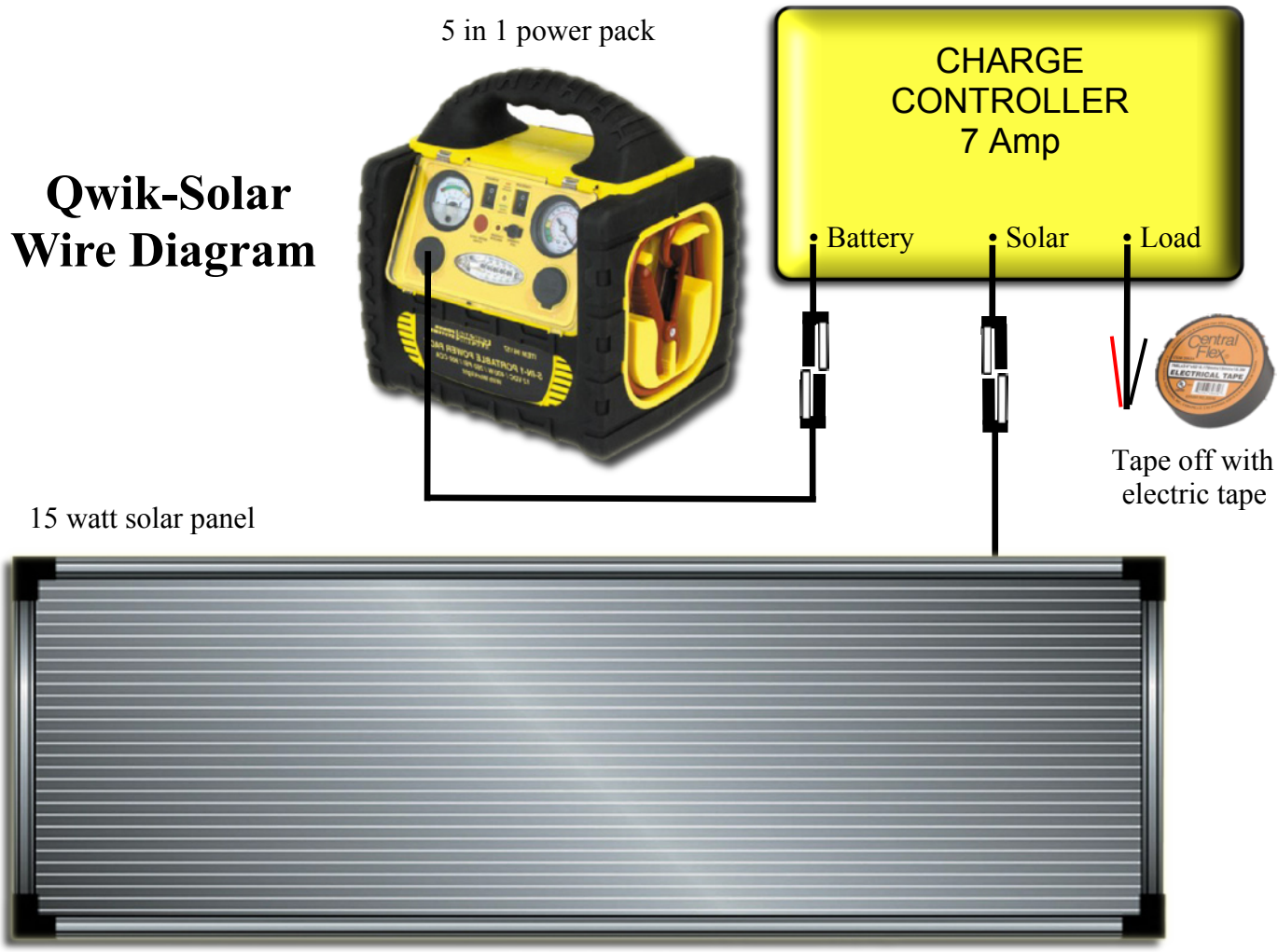
Note: If there are no quick connects, then attach with wire nuts and tape off.

Next, attach your solar panel with the quick connector marked 'solar' on your charge controller. Then use the dc extension cord (with the cigarette lighter plug) and connect it to the quick connect marked 'battery' on the charge controller.

The other end of the dc adapter will plug into the **dc outlet** on the front of your power pack. This recharges your battery using solar energy.

Congratulations! You've completed your first Qwik-Solar!

Qwik-Solar Wire Diagram



STEP 6- CHARGE PACK

Read Your Power Pack Manual for Charging Instructions

Use the AC adapter for the first full charge of your power pack. After that, you can use the solar panel to recharge your pack.

Depending on weather conditions in your area, the panel can recharge the pack in about 1 to 3 days. It even works in cloudy weather.

Do Not leave it out in the rain. The charge controller is NOT water proof.

Unplug the solar panel from the charge controller when not in use.

STEP 7- USE AND ENJOY!

As your budget allows, it's a good idea to buy a second power pack. While your using one, the other is recharging.

The Harbor Freight 5 in 1 power pack is very versatile. This 12 volt unit includes:

- A 400 watt inverter with two AC plugs.
- A jump starter for your vehicle.
- An air compressor to inflate tires
- A voltage meter to check battery charge
- An emergency light
- Two DC plugs

It can get you through **short** power outages. Run appliances and electronics such as a cell phone, television, radio, or lights. It **CAN NOT** run a refrigerator, freezer, or electric stove - these appliances are too big of a load for this small power pack.

If you own an RV or like to go camping, then the Qwik-Solar is perfect for you. Use 12 Volt appliances, such as coffee makers, electric skillets, or blenders.

Use it for a Tail Gate Party at the Game.

DC power is more efficient because there are energy losses when converted to AC power. Your power pack lasts longer when 12 Volt DC appliances are used.

QWIK-SOLAR

Easy to Build, Easy to Charge, Easy to Use

QWIK-SOLAR

DO IT YOURSELF

A quick reference to build your Qwik-Solar.
Use the 'punch list' to check off each step as you complete it.

FRAME MOUNT

- ☐ *10 1/4" PVC* [TOTAL: NINE]
- ☐ *4" PVC* [TOTAL: TWO]
- ☐ *8 3/4" PVC* [TOTAL: ONE]

PVC pipe is 1.25" Schedule 40

Measure Twice
Cut Once

ELECTRIC PARTS

- ☐ *15 WATT PV PANEL*
- ☐ *7 AMP CONTROLLER*
- ☐ *POWER PACK*

- WARNING -

Electricity Can Kill You

Batteries contain corrosive chemicals and can explode if improperly wired.

TOOLS

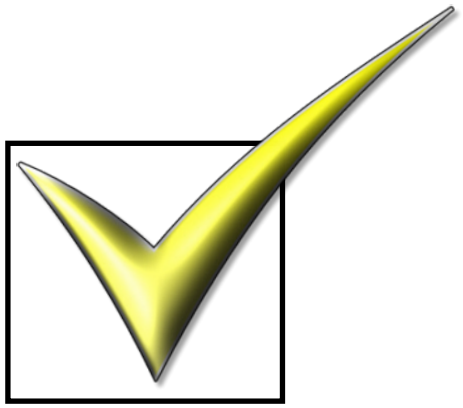
- ☐ *EYE PROTECTION*
- ☐ *EAR PLUGS*
- ☐ *SAW*
- ☐ *DRILL / DRIVER*
- ☐ *TAPE MEASURE*
- ☐ *NUMBER 2 PENCIL*

- SAFETY FIRST -

Always wear eye and hearing protection when working with power tools.
Always work in a well ventilated area to glue.

Be Safe and Work Smart

ACTION STEPS



- ☐ **1. Buy Material**
- ☐ **2. Set Up Bench**
- ☐ **3. Build Frame**
- ☐ **4. Install Components**
- ☐ **5. Wire Components**
- ☐ **6. Charge Pack**
- ☐ **7. Use and Enjoy!**

"Solar Pax - How To Build Affordable Solar"

An affordable manual for the beginner or the do-it-yourselfer. Learn how to **combine 15 watt panels safely** to generate more power.

Also includes how to find appliance loads - important to know to meet your home power emergency needs.

Solar Pax Portable Solar Power Kits

'Plug and Play!'

More Robust with More Power! You choose:

- 45 Watt Panel
- 65 Watt Panel
- 85 Watt Panel

The optional power pack includes a 60 amp AGM battery, 1500 watt inverter, two AC and one DC outlet and an easy to read power level meter.

Never be Left in the Dark when the Grid Fails!

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www.SolarOvens.org

From Their Website:

The Sport Saves Energy and Reduces Pollution

No electricity, wood or fossil fuel is required when cooking with the SPORT. More than 50% of trees cut globally are used for cooking fires. One family cooking with wood produces about 7.6 tons per year of CO_2. The Sport eliminates smoke pollution from cooking.

Please Donate

The Sport is Environmentally Friendly and Safe

The plastic portions of the Sport are produced from post consumer PET or recycled pop bottles using a process developed exclusively for the Solar Oven Society. It takes 68 20-ounce recycled pop bottles to make one oven. The Sport is one of the first products, and the largest injection molded part, made from post-consumer PET.