

Human Powered Generator Light Display Owner's Manual



TABLE OF CONTENTS

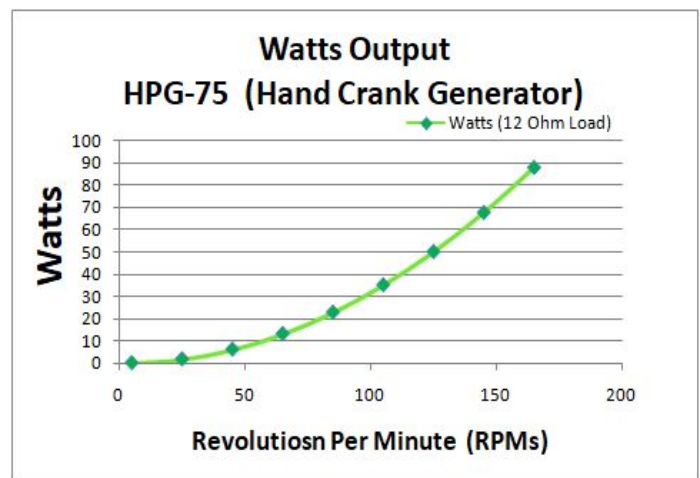
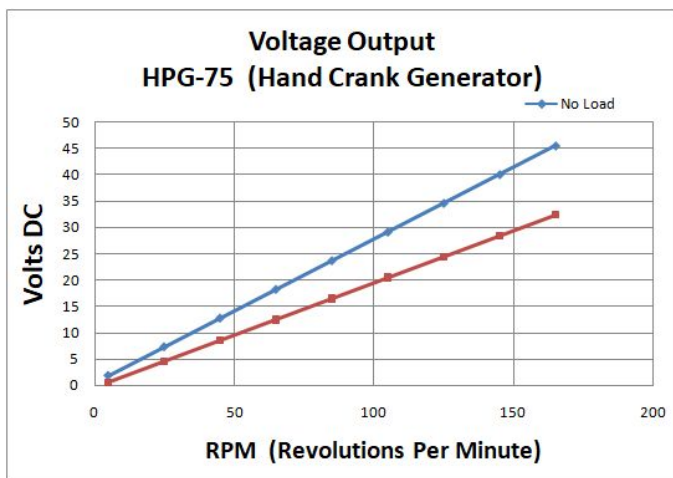
| | |
|----------------------------------|-------------------------------------|
| Introduction | 3 |
| Unpacking | Error! Bookmark not defined. |
| Installing the handle | 4 |
| Install The Power Cable As Shown | 5 |
| Light Box Cover | 6 |
| Installation of Cover | 6 |
| Verify Your Generator is Working | 7 |
| Recommended spare parts | 7 |
| Maintenance | 8 |
| Check that hand pegs are tight | 8 |
| Troubleshooting | 10 |
| Sales & Support | 11 |

Introduction

This educational / interactive human powered light display is extremely effective at teaching people about energy. More specifically it actually allows people to associate a physical level of exertion to a numeric value of “Watts” (a power load provided in the form of a light bulb).

The HPG-75 generator is constructed with industrial grade heavy duty components such as genuine bicycle foot cranks, sprockets, and bike chain. It is made sturdy as a bike is made sturdy to last a very long time. The estimated number of usable hours is over 50,000 hours.

Below is the Voltage curve for the generator along with the power curve. The horizontal axis for each graph represents how fast you are turning the hand cranks. This speed is measured in “RPMs” which stands for revolutions per minute.



The hand crank generator is setup on a table or on the floor if small children are participating. If desired regular bike pedals can be installed so that people can use this generator as a pedal power generator by putting it on the floor and pedaling with their feet. A cable connects the generator to the light box.

Details on the recommended bulbs to install in this education display are shown below. Note: The total power of all three bulbs turned on at once should not exceed 75 Watts as the display could be damaged or will not work as designed.

Recommended Bulb Configuration

- 1) 12V LED bulb consuming about 7 Watts
- 2) 12V CFL bulb (AKA compact fluorescent) consuming about 15 Watts
- 3) 12V Incandescent bulb consuming 25 Watts if small children are participating, install a 50 Watt bulb if teenagers and adults are participating.

Note: It does not matter what order these bulbs are put in.

Model: HPG-LBD-75



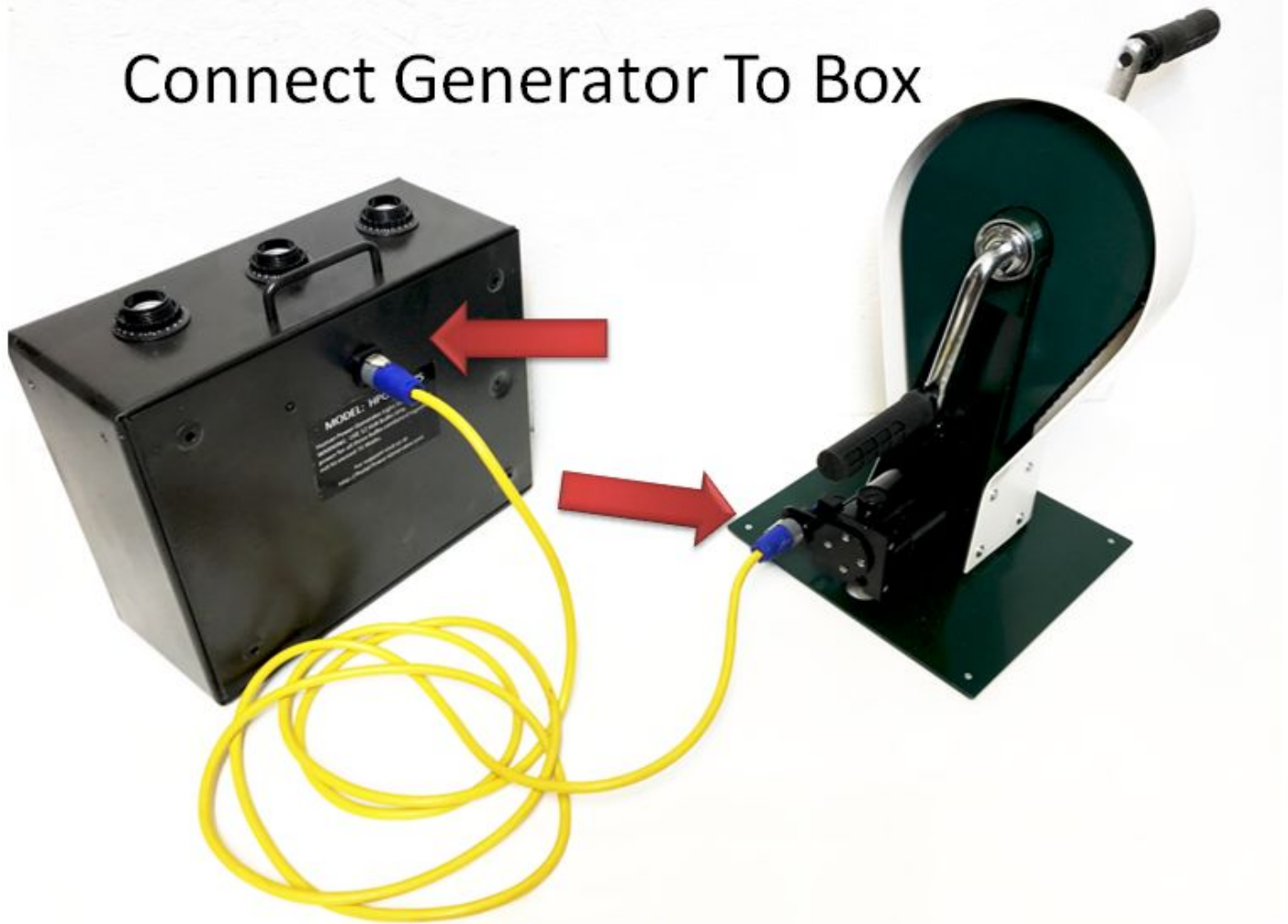
Installing the handle

Once the packaging is removed then install the handle on the hand crank using the included wrench to do the tightening. Do not worry about over tightening. It is important to start the threads carefully. If the pedal simply does not want to screw in, then back it out and put a little oil on the threads and try again gently. Once it is in all the way, use the wrench to apply 20lbs of force on it.



Install The Power Cable As Shown

Connect Generator To Box



<http://PedalPowerGenerator.com>

Light Box Cover Option



<http://Pedal Power Generator.com>

Light Box Cover

When the light box display is not supervised by an adult it is necessary to install a cover over the light bulbs. This will prevent children from tampering with the bulbs and possibly hurting themselves.

Installation of Cover

Place the clear cover on the top of the box as shown



<http://Pedal Power Generator.com>

Install 4 thumb screws as shown



When finished it should look like this



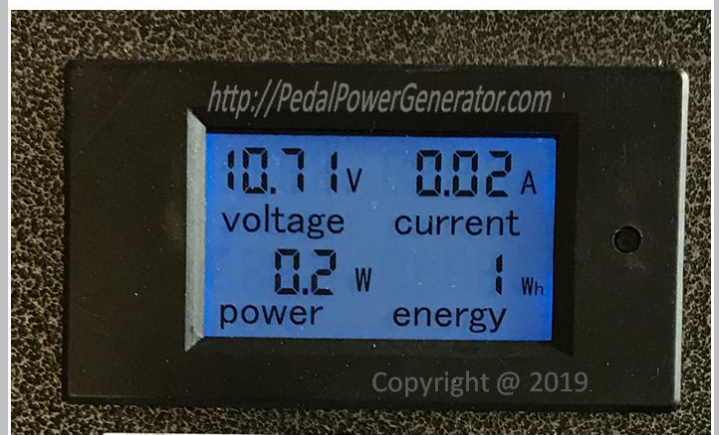
<http://Pedal Power Generator.com>

Verify Your Generator is Working

With the light switches turned off turn the cranks of the human powered generator and verify that the power meter lights up on the front of the light box. In this case one can see that the generator is putting out 10.71 Volt. The current is the second number measured in “Amps” which will always be close to zero when the light switches are left off.

Now turn on an LED bulb and generate power from the human powered generator. At this point the light will turn on once you read a Voltage level of 13 Volts or so. The current will then show a value greater than zero. The power will be around 7 Watts depending on what type of LED bulb is being used.

If a person goes extremely fast and generates a Voltage in the 50 Volt range there is no reason to be concerned. The light box has built in over voltage protection to handle this high voltage.



Recommended spare parts


The following items are recommended spare parts for the system:

- Bike chain – estimated life 50,000 hours
- Handles – estimated life 50,000 hours
- Generator – estimated life 100,000 hours

Maintenance

The following maintenance items are to be performed as specified:

Check that hand pegs are tight

| Frequency | Details |
|-----------|--|
| Weekly | <p>Check each hand peg with wrench to make sure each one is snug. The proper torque to put on this wrench is approximately 10 foot-lbs.</p> <p>If a hand peg is loose, then it is important to put Loctite on the threads before tightening. This is a type of glue that will keep the hand peg from loosening up again. It can be found here: https://amzn.to/2OUqfJv</p>  |

Check Outer Chain Shroud on Generator For Rubbing

Frequency

Weekly

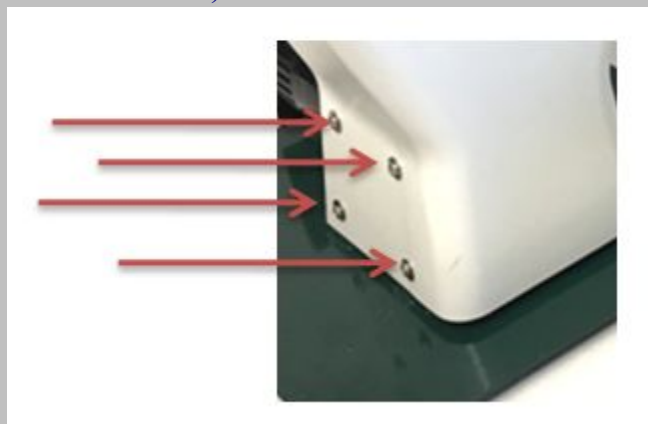
Details

It is possible that if the outer shroud is pushed on too hard that it could become misaligned and start rubbing on the hand crank arm.

This can be easily detected by seeing movement of the outer shroud or hearing additional rubbing noises.

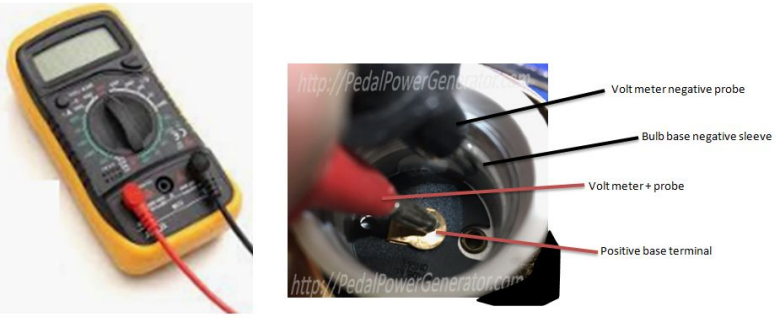


At this point it will be necessary to loosen the 4 screws shown below on each side of the shroud of the hand crank generator. Then realignment with the aid of a 2nd person, then tighten the 8 screws back up. (4 screws on each side).




Troubleshooting

It may be necessary to perform some trouble shooting on this generator / light box system. Here is some trouble shooting scenarios.

| PROBLEM DESCRIPTION | STEPS TO TAKE |
|--|---|
| <p>Power meter on light box does not light up</p> | <ol style="list-style-type: none">1) Verify that the power cable connector at the generator is properly inserted and locked into place. The silver locking tab will making a clicking noise when it moves and locks into place.2) Verify that other end of the power cable is properly inserted into the back of the light box display and locked into place.3) If steps 1 and 2 do not solve the problem then use the Volt meter test leads to probe the Voltage at the light bulb base (the bulb must be removed to expose the test points to probe)4) Put the meter into DC Volts mode.5) Turn off or remove the bulbs from the box.6) Turn the light switch in the up position corresponding to the bulb base that you are going to measure.7) Have someone turn the hand crank generator at a 50% speed. The Voltage at the light bulb base should be between 11.5 to 15 Volts DC.8) If there is no Voltage at the bulb base then contact technical support for further troubleshooting steps. <div data-bbox="727 1052 1502 1524" style="text-align: center;"><p>Probing the DC light bulb base</p><p>Copyright © 2019</p></div> |

| PROBLEM DESCRIPTION | STEPS TO TAKE |
|------------------------|---|
| Bulb does not light up | <p>If a bulb does not light up then follow this example: For this example bulb 2 is a CFL bulb and bulb 1 is an LED bulb. Assume that the bulb 2 CFL bulb stops working. Swap bulbs in locations 1 and 2. Have someone turn the hand crank generator at 50% speed. Now if the CFL bulb still does not turn on, and the LED bulb does come on in position 2 then that proves that the CFL bulb is blown. A new one will need to be ordered.</p> |

| PROBLEM DESCRIPTION | STEPS TO TAKE |
|--------------------------|---|
| Generator is not turning | <p>If no sound of the generator turning is heard when turning the hand cranks, then it can be assumed that one of the following scenarios has occurred:</p> <ol style="list-style-type: none"> 1) The bicycle chain became too slack and the chain fell off. Steps need to be taken to put it back on and tighten it up properly. 2) The master link of the bike chain came off 3) The chain has too many hours of use and needs to be replaced <p>PUTTING THE CHAIN BACK ON</p> <ol style="list-style-type: none"> 1) Remove the outer shroud (8 screws with a screwdriver) 2) Loosen the 4 bolts of the generator can be slid up and down in the adjustment slots 3) Remove the master link off the chain 4) Wrap the chain around the lower sprocket of the dc generator and the upper sprocket such that there is only . 5) Use a pair of needle nosed pliers to put the clip on the <div style="text-align: center;">  </div> <p>master link as shown</p> <ol style="list-style-type: none"> 6) Gently slide the DC generator down in the slots until the chain is snug but not too tight. If it is too tight it will make the DC generator hand crank way too noisy. 7) After the chain tension is adjusted then tighten the 4 mounting bolts up on the generator and put the outer shroud back on. |

Sales & Support

Email: pedalpowergenerator@gmail.com

Website: Pedalpowergenerator.com

BDW Enterprises LLC
1293 E. Parkview Dr.
Gilbert, AZ 85295

Phone: 480-489-4111