1. Inverter
2. Battery Box
3. Battery Leads
4. Fuse Bar

Introduction

Reasonable care and safe methods should be practiced. Check local codes and requirements before installation. This manual contains important information for the safe use of this product. Read this manual completely before using this product and refer to it often for continued safe product use.

DO NOT THROW AWAY OR LOSE THIS MANUAL. Keep it in a safe place so that you may refer to it when needed.

Important Safety Instructions

Before proceeding further, kindly go through the safety instructions carefully.

Always disconnect the unit from the receptacle power source and battery before handling or making any adjustments to the system.

Battery Backup Warning:

WARNING: Risk of electrical shock this unit has not been investigated for use in outdoor areas.

WARNING: Risk of electrical shock. Connect only to a properly grounded, three pronged grounding type receptacle. Under any circumstances, do not remove the grounding prong from the power cord.

WARNING: Do not smoke, use spark able electrical devices or open flame when working on this unit!

WARNING: Do not install unit in locations classified as hazardous per N.E.C., ANSI/ NFPA 70 - 1999.

FAILURE TO HEED ABOVE CAUTIONS COULD RESULT IN INJURY OR DEATH.

WARNING: These systems are designed to operate **only one pump at a time**, the one(s) supplied with the unit. Using anything other than the pump supplied with the system will cause damage to the unit and void the warranty.

General Precautions
Before using the inverter, read all instructions and caution markings on the inverter, the batteries & all appropriate sections of this instruction manual.

WARNING: Do not expose the inverter to any type of chemicals. The inverter is designed for interior use only.

WARNING: Do not disassemble the inverter; take it to a qualified service center when service or repair is required. Opening by unqualified personnel can lead to electrical shock or fire hazard and void the warranty.

To reduce risk of electric shock, disconnect all wiring before cleaning.

WARNING: Avoid exposing the inverter or batteries to any type of explosive gases (in the vicinity, as batteries generate explosive gases during normal operation). Provide proper ventilation. The battery enclosures should be designed to prevent accumulation and concentration by hydrogen gas in “pockets” at the top of the compartment. Vent the battery compartment from the highest point. A sloped lid can also be used to direct the flow to the vent opening location. To reduce the risk of the battery explosion, follow all the instructions of the battery supplier or any equipment you intend to use in the vicinity of batteries.

WARNING: Use the correct insulated tools to make AC/DC wiring connections.

WARNING: Do not install this inverter on or near flammable materials (plywood, chemicals, gas online etc.)

Personal Precautions

CAUTION: Someone should be within the range of your voice to come to your aid when you work near batteries.

CAUTION: Have plenty of fresh water and soap nearby in the event that battery acid contact skin, clothing or eyes.

CAUTION: Wear complete eye and clothing protection.

CAUTION: Avoid touching eyes while working near batteries. Wash your hands when done.

CAUTION: If battery acid comes in contact with skin or clothing, wash immediately with soap and water.

Knowing Your Inverter

In its most basic form, an inverter transforms Direct Current (DC) to Alternating Current (AC). The battery acts as a reserve to ensure continuous supply of power whenever mains supply from utility power is not available. The inverter is used to charge the battery when normal utility power is available and converts the battery's DC to AC voltage to run the pump when utility power is lost.

Battery Safety

A battery can present a risk of severe burn and injury from high short circuit current. The following precautions should be observed when working on batteries.

CAUTION: Do not dispose of battery in a fire. The battery may explode.

CAUTION: A battery can present a risk of severe burn and injury from high short circuit current. The following precautions should be observed when working on batteries.

CAUTION: Do not open or mutilate the battery. Released electrolyte is harmful to the skin and eyes. It may be toxic.

CAUTION: The electrolyte is a dilute sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following procedures should be observed:

a. If electrolyte contacts the skin, wash it off immediately.

b. If electrolyte contacts the eyes, flush thoroughly and immediately with water. Seek medical attention.

c. Spilled electrolyte should be washed down with a suitable acid neutralizing agent. A common practice is to use a solution of approximately one pound (500 grams) bicarbonate of soda to approximately one gallon (4 liters) of water. The bicarbonate of soda solution be added until the evidence of reaction (foaming) has ceased. The resulting liquid should be flushed with water and the area dried.

CAUTION: Do not reverse the battery connections, as it will blow the battery fuse. A power cord has been provided to connect the inverter to incoming AC wall outlet.

Battery Requirements

Your unit operates on 12 VDC battery power when in the power fail mode. A UL recognized deep cycle marine battery should be used. There are two principal types of batteries: starting and deep cycle. There are several different types of battery constitutions including liquid lead acid, nickel iron, nickel cadmium, alkaline and maintenance free. Batteries are sealed or vented.

Starting Batteries
Starting batteries are designed for high cranking power but not deep cycling. Do not use them with your inverter. They do not affect the inverter, but they will simply not last long in a deep cycle application. They use lot of thin plates to maximize the surface area of the battery. This allows very high starting current but less run time when the battery is cycled.

Deep Cycle Batteries
Deep cycle batteries are best suited for use with the inverter. They are designed to have the majority of their capacity used before recharge. Available in many sizes and types, be sure to use at least a 100AH battery.

BATTERIES NOT INCLUDED

Battery Maintenance

If you are using AGM maintenance free batteries you do not need to perform any maintenance to your batteries. For all other batteries refer to the manufacturer recommended battery maintenance section.

Maintenance or replacement of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions.

Replacing Battery

Wear full eye protection and protective clothing.

When replacing the battery/batteries, use the same type and size battery/batteries. **See left, Battery Requirements**.

DANGER: The electrolyte is a dilute sulfuric acid that is harmful to the skin and eyes. It is electrically conductive and corrosive. The following procedures should be observed:

- Do not lay tools or metal objects on top of the batteries
- Use tools with insulated handles

When Inverter is Operating on AC Power

1. Unplug the unit from the wall.
2. Follow the Installation Instructions of this manual, starting with step 8 and working back to step 1.
3. Remove and safely dispose of old batteries.
4. Install new battery, starting with Step 1 of the Installation Instructions.

When Inverter is Operating on DC Power

1. Follow Steps 1 – 4 above.
2. Push and hold the Power button on the front of the inverter for 3 – 5 seconds.

Tools Needed

A pipe wrench, insulated pliers, insulated adjustable wrench, and insulated screwdriver will be needed.

Installation Instructions

Remove all packing and contents from the battery box enclosure. The contents should include: Inverter and quick connect lead.

Find a suitable place to set the unit. Keep in mind that the unit should be placed in a area where water and moisture will not splash or drip on the unit, the fan inlet on the sides of the enclosure will not be obstructed and where a properly grounded three prong dedicated receptacle is within reach of the power cord.

Remove watches, rings, or other metal objects.

Use tools with insulated handles.

Do not lay tools or metal parts on top of batteries.

1. Facing the front of the battery box, install a battery on the front of the box with the negative(-) terminal to the left. **See Figure A, Page 6**.
2. Install the second battery in the back of the box with the positive (+) terminal on the left side. **See Figure A, Page 6**.
3. Install the quick connect leads through the hole provided in the left side of the battery box enclosure. Connect the Red lead to the

positive(+) battery terminal. Connect the Black lead to the negative (-) battery terminal. See **Figure B, Page 6**.

4. Install the fuse link between the positive and negative on the right side of the batteries. Make sure all battery connection are properly tighten to 75 inch pounds. Install battery cover back on the battery box. **See Figure C, Page 6**.

5. Install the inverter on the lid with the display facing the front of the battery box.

6. Verify that the MCB (Main Circuit Breaker) on the back is in the OFF position.

7. Plug the inverter power cord into a 120 volt AC dedicated 3 prong outlet.

8. Connect the quick connect assembly together from inverter to batteries. **See Figure D, Page 6.**

9. Powering Up: To charge your batteries, make sure the MCB (Main Circuit Breaker) is in the ON position. The LCD display will come on and show the condition of the batteries. If the batteries are fully charged, the battery display will have all bars lit and show 100%. If batteries are charging, the Battery display will cycle the bars from bottom to top and show the percentage of charge. This shows that the charger is working properly in AC mode. Any AC load powered by the inverter should also work at this point, since a portion of the AC power is passed through the inverter to the power the load.

10. Testing: Unplug the power cord from the wall outlet. The inverter will beep four times. With the Battery Bars cycling from top to bottom, the battery percentage will slowly start to drop. The inverter is now in DC mode, taking the battery power and using it to power the load uninterrupted. Make sure you plug the inverter back into the wall outlet.

The above steps will complete a function test of the inverter. If all areas pass, the inverter is ready for use. If any areas fail, see the troubleshooting table.

Warranty is Void, if...

1. Using an extension cord.
2. Power cord has been cut or the grounding prong has been removed or using an adaptor fitting.
3. Inverter has been used in an outdoor application.
4. Batteries not meeting the above specifications have been used.
5. Inverter has been submerged in water.
6. Inverter has been tampered with in any manner not described in the above instructions.
7. Working on the inverter, pump or switch while plugged in.
8. Inverter has been disassembled by customer.
9. Inverter has been applied to products exceeding the maximum capacity of the inverter, i.e., a pump other than the one supplied with the unit or more than one pump at the same time.
10. Inverter has been applied to the wrong voltage.
11. Removing motor housing, unscrewing impeller, or otherwise removing impeller seal of pump.
12. Running the pump continuously.
13. Pumping chemicals or corrosive liquids.
14. Pumping gasoline or other flammable liquids.
15. Any labels or cord tags have been removed from the inverter, pump or switch.

55AC Back Panel

The inverter has two battery wires coming out from the rear side, an MCB, (2) 8 AMP (total) output sockets and a power cord to connect with mains supply. Battery wires are red and black in color. The red color wire has to be connected to the POSITIVE TERMINAL of the battery and black one to the NEGATIVE TERMINAL. One output socket is for the pump & the other is for an optional high water alarm box.

55AC Front Panel

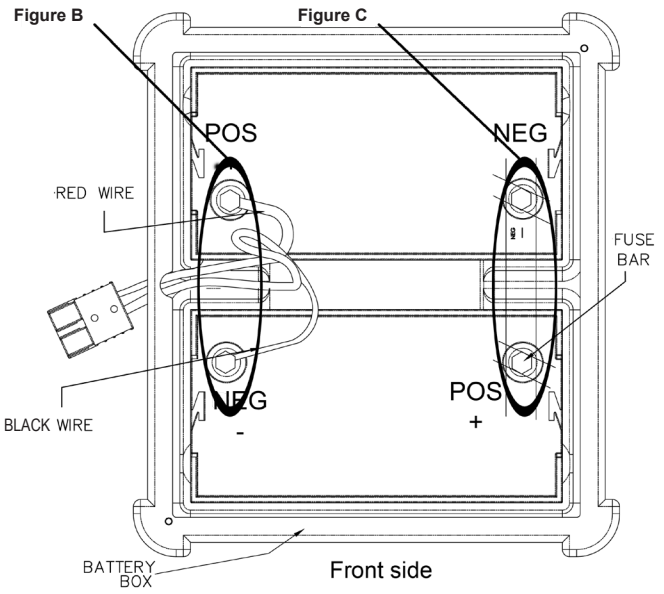
AC MODE

DC MODE

Technical Specifications

A.C. Lower Voltage Limit	90 VAC ± 5V
Output Voltage with Full Load	120V/110 ± 10V
Battery Lower Voltage Limit	21 VOC ± 0.2V
Maximum Output Current	9 FLA
Battery Input	24 VDC
Battery Charger Boost Voltage	13.7 ± 0.2V (Per Battery)
Overload	130 ± 3% (With Auto Reset Function)

Figure A



BATTERIES NOT INCLUDED

Figure B

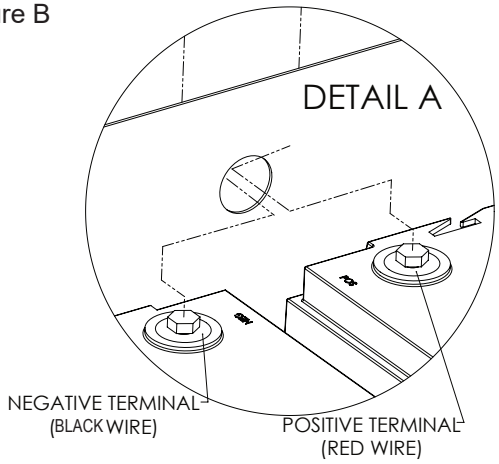


Figure C

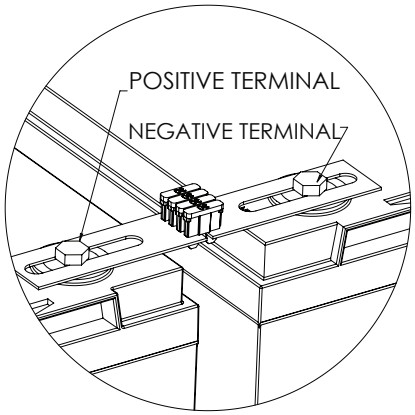
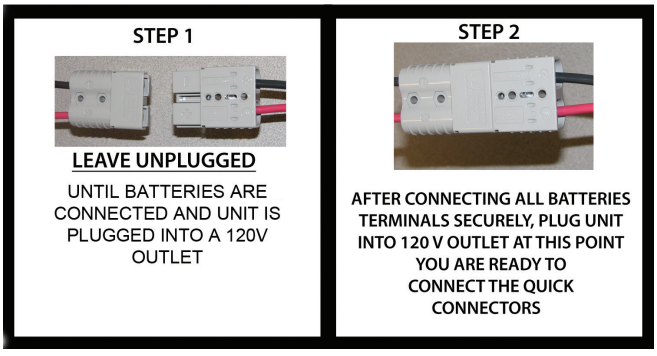


Figure D



NOTES

3 Year Residential Warranty

1. Coverage and Term. Metropolitan Industries, Inc. ("**Metropolitan**") warrants to the original purchaser (the "Buyer") of each Ion® product (the "product"), that any part thereof which proves to be defective in material or workmanship within three (3) years from date of manufacture, will be replaced at no charge with a new or remanufactured part, F.O.B. factory. Buyer shall be responsible for all freight charges and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof.

2. Exclusions. **THE WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS AND EXCLUSIONS:**

(a) The Warranty excludes products or workmanship which becomes defective as a result of: (i) earthquake, fire, storms, the elements or any other acts of God; (ii) normal wear and tear from use; (iii) accident, misuse, abuse or neglect; (iv) modifications made by Buyer or any third party, other than **Metropolitan**; and (v) Buyer's failure to properly install, maintain, service and/or operate the product under normal conditions and according to manufacturer's instructions.

(b) **Metropolitan** shall not be responsible for, and the Warranty shall not cover, extended damage which occurs because of Buyer's failure to notify **Metropolitan** promptly in writing of apparent defects.

(c) Any part or component designated as manufactured by anyone other than **Metropolitan** shall be covered only by the express warranty of the manufacturer thereof.

(d) The Warranty shall lapse upon Buyer's failure to fully comply with the terms and conditions of its contract with **Metropolitan**, including Buyer's failure to pay the purchase price for the product or any portion thereof. Buyer's subsequent compliance with the terms and conditions of any such contract, will not cause the term of the Warranty to extend beyond the time period set forth above.

(e) No actions taken by **Metropolitan** to correct a defect in a product shall extend the Warranty beyond the period set forth above. **Metropolitan** shall not be obligated to remedy any defect, where otherwise required pursuant to the Warranty unless and until Buyer notifies **Metropolitan** in writing of the defect and then only if such notification is made prior to the expiration of the period set forth above.

3. Process of Claims and Repairs. **Metropolitan** agrees that if the product or any part or component thereof shall fail to conform to the terms of this Warranty, **Metropolitan** shall replace such nonconforming product, part or component at the original point of delivery and furnish instruction for its disposition. Any transportation charges involved in such disposition and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof shall be the responsibility of Buyer.

4. Limitation on Liability. Notwithstanding any provision to the contrary, **Metropolitan's** entire liability under this Warranty shall not in the aggregate exceed, and Buyer's exclusive and sole remedies are, to the extent permitted by law, shall be to secure replacement of the defective product. **UNDER NO CIRCUMSTANCES SHALL METROPOLITAN BE LIABLE UNDER THE WARRANTY FOR ANY INDIRECT, PUNITIVE, SPECIAL, EXEMPLARY, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING LOST PROFITS, REVENUE, USE OR ECONOMIC ADVANTAGE).**

5. Express Waiver of Any Other Warranties. **THE EXPRESS WARRANTY SET FORTH IN THIS WRITTEN WARRANTY IS THE ONLY WARRANTY MADE BY METROPOLITAN, OR ANY OTHER PARTY, IN CONNECTION WITH ANY PRODUCT PURCHASED FROM METROPOLITAN. NEITHER METROPOLITAN, NOR ANY OTHER PARTY, MAKES ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH IS NOT SET FORTH HEREIN, AND METROPOLITAN HEREBY DISCLAIMS AND BUYER HEREBY WAIVES ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

6. Not Transferable. The Warranty may not be transferred and shall be void on the sale or other transfer of the product.

7. Products and Warranty Subject to Change. **Metropolitan** reserves the right to make revisions to its products and their specifications, and to revise this Warranty and related information without notice.