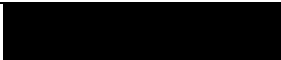


# INSTRUCTION MANUAL

PRO-HD

12/24 Battery  
Maintenance Charger



## IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions for your ProHD battery charger
2. Use of an attachment not recommended or sold by PulseTech Products may result in a risk of fire, electric shock, or injury to persons.
3. To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
4. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:
  - a) That pins on plug of extension cord are the same number, size and shape as those of plug on charger;
  - b) That extension cord is properly wired and in good electrical condition; and
  - c) That wire size is large enough for ac ampere rating of the charger as specified:

<b>Length of cord (ft):</b>	<b>25</b>	<b>50</b>	<b>100</b>
<b>AWG size of cord:</b>	<b>16</b>	<b>12</b>	<b>10</b>

5. Do not operate charger with damaged cord or plug – replace the cord or plug immediately.
6. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
7. Do not disassemble charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.



8. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.

#### 9. WARNING – RISK OF EXPLOSIVE GASES.

a) WORKING IN VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASSES DURING NORMAL BATTERY OPERATION. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

b) To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in vicinity of battery. Review cautionary marking on these products and on engine.

#### 10. PERSONAL PRECAUTIONS

a) Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

b) Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.

c) Wear complete eye protection and clothing protection. Avoid toughing eyes while working near battery.

d) If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and get medical attention immediately.

e) NEVER smoke or allow a spark or flame in vicinity of battery or engine.

f) Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.



g) Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

h) Use charger for charging a LEAD-ACID battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.

i) NEVER charge a frozen battery.

## 11. PREPARING TO CHARGE

a) If necessary to remove battery from vehicle to charge, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.

b) Be sure area around battery is well ventilated while battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.

c) Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.

d) Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer's recharging instructions.

e) Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.

f) Determine voltage of battery by referring to vehicle operator's manual and make sure it matches the output rating of the battery charger.



## 12. CHARGER LOCATION

- a) Locate charger as far away from battery as dc cables permit.
- b) Never place charger directly above battery being charged; gases from battery will corrode and damage charger.
- c) Never allow battery acid to drip on charger when reading gravity or filling battery.
- d) Do not operate charger in a closed-in area or restrict ventilation in any way.
- e) Do not set a battery on top of charger.

## 13. GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS

- a) Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- b) DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.
- c) This battery charger is rated for more than 15 amperes and is for use on a circuit having a nominal rating of 12 volts and is factory-equipped with a specific electric cord and plug to permit connection to an acceptable electric circuit. Make sure that the charger is connected to an outlet have the same configuration as the plug. No adapter should be used with this charger.

## 14. DC CONNECTION PRECAUTIONS

- a) Connect and disconnect dc output clips only after setting charger switch to the off position and removing ac cord from electric outlet. Never allow clips to touch each other.
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b) Attach clips to battery and chassis as indicated in 15(e), 15(f), 16(b), and 16(d).

c) Note: If using the NATO receptacle on a military vehicle, proceed to paragraph 17.

15. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN VEHICLE. A SPARK NEAR BATTERY MAY CAUSE BATTERY EXPLOSION. TO REDUCE RISK OF A SPARK NEAR BATTERY:

a) Position ac and dc cords to reduce risk of damage by hood, door, or moving engine part.

b) Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.

c) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.

d) Determine which post of battery is grounded (connected) to the chassis. If negative post is grounded to chassis (as in most vehicles), see (e). If positive post is grounded to the chassis, see (f).

e) For negative-grounded vehicle, connect POSITIVE (RED) clip from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis, engine block or NEGATIVE (NEG, N, -) grounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gage metal part of the frame or engine block.

f) For positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis, engine block or POSITIVE (POS, P, +) grounded post of battery. Do not connect clip to carburetor, fuel lines, or sheet-metal parts. Connect to a heavy gage metal part of the frame or engine block.

g) When disconnecting charger, turn switches to off, disconnect AC cord, remove NEGATIVE (BLACK) clip, and then remove POSITIVE (RED) clip.



h) Charge will terminate when charge current drops below 1 ampere.

i) If POSITIVE (RED) and NEGATIVE (BLACK) leads are connected in reverse, an audible alarm will sound and the charger will produce no output current.

16. Follow these steps when battery is outside vehicle. A spark near the battery may cause battery explosion. To reduce risk of a spark near battery:

a) Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has a larger diameter than NEGATIVE (NEG, N, -) post.

b) Connect POSITIVE (RED) charger clip to POSITIVE (POS, P, +) post of battery.

c) Connect NEGATIVE (BLACK) charger clip to NEGATIVE (NEG, N, -) post of battery.

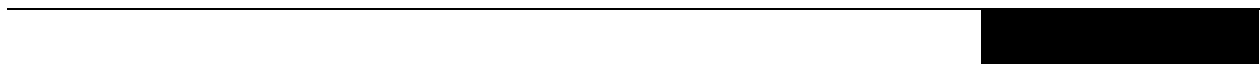
d) Do not face battery when making final connection.

e) When disconnecting charger, always do so in reverse sequence of connecting procedure.

f) A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use.

g) Charge will terminate when charge current drops below 1 ampere.

h) If POSITIVE (RED) and NEGATIVE (BLACK) leads are connected in reverse, an audible alarm will sound and the charger will produce no output current.



17. FOLLOW THESE STEPS WHEN BATTERY IS INSTALLED IN A MILITARY VEHICLE EQUIPPED WITH A NATO SLAVE RECEPTACLE:

- a) Test each battery using a PulseTech 490PT battery analyzer or equivalent and record the Vdc and CCA measurements for each. If the batteries measurements are not within 0.5 Vdc and 200 CCA, the batteries must be charged individually as described in 15 until they are within stated tolerances. Once all batteries are within 0.5 Vdc and 200 CCA, proceed to 17(b).
- b) Set charger switch to the off position and remove ac cord from electric outlet.
- c) Connect the NATO Slave Jack on the charger to the NATO Slave Receptacle on the vehicle.
- d) Charge will terminate when charge current drops below 1 ampere.
- e) Set charger switch to the off position and remove ac cord from electric outlet prior to remove NATO Jack from the NATO Slave Receptacle.

17. INDICATORS:

- a) Ammeter displays the charge current being delivered to the battery.
  - b) Red LED: Pulsing is being applied to the battery.
  - c) Green Power LED: Unit is switched on and powered.
  - d) Green 12V Charge LED: Unit detects a 12 Volt battery and is charging.
  - e) Green Charge Complete LED: Battery has been charged, unit is ready for another battery.
  - f) Yellow 24V Charge LED: Unit detects a 24V battery and is charging.
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**PULSETECH PRODUCTS CORPORATION  
REDIPULSE PRO HD BATTERY CHARGER**

**What Does This Warranty Cover?** This warranty covers any defects in workmanship or materials in this charger under normal use and service.

**How Long Does The Coverage Last?** This warranty runs for one (1) year from the date of purchase.

**What Will PulseTech Do?** PulseTech will, at its option, replace or repair any defective unit with a new or rebuilt unit at no charge.

**What Does This Warranty Not Cover?** This warranty applies only to the battery charger. This warranty does not cover any other equipment, static damage, water damage, over-voltage damage, dropping unit, or damage resulting from extraneous causes including owner misuse. In addition, PulseTech will not be responsible under this warranty if PulseTech determines that (1) upon examination that the circuit board failure was (A) caused by misuse, neglect, accident, alteration, or abnormal condition of operating or handling (including the failure to install the product in accordance with PulseTech's instructions and observe the warnings on the product and the instruction manual), or other conditions beyond the control of PulseTech or (B) damaged in transit to PulseTech, and (2) the owner is not the original purchaser that purchased the product through an authorized PulseTech dealer or distributor. This warranty is void if owner attempts to disassemble the unit or to modify the cable assemblies. IN NO EVENT SHALL PULSETECH BE LIABLE FOR ANY DIRECT, SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES, EXPENSES, LOST SAVINGS OR LOST PROFITS OR ANY OTHER DAMAGES OF ANY KIND FROM ANY BREACH OF THIS WARRANTY OR OTHERWISE. Some states, provinces or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

**How To Get Service?** Contact PulseTech by calling 1-800-580-7554 for a Return Authorization Number. Then send the product postage prepaid with proof of purchase (sales receipt) within the warranty period to PulseTech. Battery chargers beyond the warranty period are subject to the repair charges in effect at that time.

**How Does State, Province or Country Law Apply?** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, province to province or country to country.

THIS WARRANTY IS THE SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER  
WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO  
ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR  
A PARTICULAR PURPOSE



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