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xantrex



TC10

Owner's Manual

**Xantrex
Truecharge™ 10
Battery Charger**

www.xantrex.com

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Introduction

Your Xantrex Truecharge 10 is an advanced battery charger designed specifically for today's high performance deep-cycle lead-acid batteries. It provides charging performance that simple marine and automotive chargers are unable to provide.

The Truecharge 10 is designed to recharge 12 volt lead-acid batteries with capacities from 25 amp hours to 200 amp hours. If you wish to charge batteries with capacities greater than 200 amp hours, Xantrex's Truecharge 20 or Truecharge 40 chargers will be better choices.

To get the full benefit of the Truecharge 10's capabilities, please read and follow the instructions in this manual. This manual covers both the TC10 115 VAC model and the international TC10i 230 VAC model. TC10i input specifications are shown in parentheses. Pay special attention to the **Important Safety Instructions** in this manual and to the **CAUTION** and **WARNING** statements in this manual and on the Truecharge 10.

Truecharge 10 Features

The Truecharge 10 is a true "smart charger" that automatically provides the correct charge cycle for modern sealed ("gel") or flooded ("wet") lead-acid batteries.

Microprocessor Controlled Three-Step Charging

Experts and battery manufacturers recommend that lead-acid batteries be charged with a three-step charge cycle to provide a fast, complete charge. The microprocessor in the Truecharge 10 precisely regulates the voltage and current delivered to the battery, accurately charging without risk of overcharging and battery damage.

Proprietary software algorithms compensate for a variety of conditions which "fool" less sophisticated chargers into delivering an improper charge.

Truecharge 10 10-Amp Continuous Rating

The Truecharge 10 will deliver its rated 10 ampere charging current for most of the charging cycle. The charger only reduces the charging current below this continuous rating level when the battery is approaching full charge. Many other chargers only deliver their rated

charging current for a short initial part of the charge cycle. Charging current decreases rapidly (“tapers off”) as the battery charges.

Because it delivers rated current over most of the charge cycle, your Truecharge 10 will charge your batteries faster than many other chargers rated at 20 amperes or more.

Wide Voltage Range Operation

Now you can give your battery a top-quality charge even when your AC power isn't top quality. The Truecharge 10 precisely maintains the correct charging voltage for your battery when the AC line voltage drops as low as 90 VAC, or rises as high as 135 VAC (200 to 260 VAC for the international 230 VAC model). A surge protector in the Truecharge 10 protects it, and your 12-volt circuits, from surges and spikes on the AC power line.

Selector Switch for Battery Type

The Truecharge 10 has a selector switch that allows you to set the charger for the charging characteristics of the new sealed lead-acid “gel” batteries, or for the charging characteristics of conventional flooded batteries. By setting the switch correctly before you begin charging your battery, you will be ensuring that it receives the best possible charge.

Extensive Protection Features

The Truecharge 10 will not begin delivering current until it detects that it has been properly connected to a battery. You will have fewer worries about accidental sparks as you make your connections to the battery. The Truecharge 10 will not deliver current if it detects a reverse polarity connection, a short circuit, or connection to a battery with incorrect voltage. The Truecharge 10 will also shut down if it becomes overheated because of inadequate ventilation.

Isolated Design

The DC battery charging circuits of the Truecharge 10 are electrically isolated by a transformer from the AC power source circuits. This improves your personal safety and ensures that there will be no electrolysis problems when charging batteries on a boat.

Theory of Operation

High Frequency Power Converter

The Truecharge 10 uses modern high frequency switching power circuits to convert the alternating current from the utility line to the low voltage direct current required to charge the battery. The circuits are similar to those used in power supplies for computers and other modern electronic equipment.

The alternating current from the utility line is first rectified by diodes to produce a high voltage direct current.

This direct current is switched at a very high frequency (approximately 75 kHz) to produce pulses of current which are stepped down to a lower voltage by a small high frequency transformer. The low voltage pulses of current from the secondary side of the transformer are rectified and smoothed to create a continuous direct current which is sent to the battery.

The power switching is performed by power MOSFET transistors. These transistors also control the charging current and voltage through a process called *pulse width modulation* (PWM). The average value of the voltage or current is controlled by varying the lengths of the pulses of current. Shorter duration pulses result in lower voltage and current while longer duration pulses result in higher voltage or current.

The advanced power conversion technology in the Truecharge 10 gives you several benefits:

- A charger that is smaller and lighter than most other chargers with similar capabilities. The Truecharge 10 is easy to carry with you and can be stored or installed in small compartments.
- A totally silent charger. There is none of the “hum” or “buzz” commonly associated with chargers based on older technology.
- Non-pulsing charging current. While the Truecharge 10 uses current pulses internally, the output current is filtered so that it is very smooth. This is the ideal current for charging lead-acid batteries. Many other chargers produce a pulsating charging current that does not recharge the battery to its maximum potential.

Three-Step Charging Process

Modern lead-acid batteries will last longer and charge faster if they are charged in a particular sequence known as a *three-step charge*. The Truecharge 10 implements the three-step charging process.

In the first step, known as the *bulk charge*, the Truecharge 10 delivers its rated current (10 A) until the battery voltage approaches its *gassing voltage*—typically around 14.4 volts. The bulk charge step restores about 75% of the battery's charge.

The gassing voltage is the voltage at which the electrolyte in the battery begins to break down into hydrogen and oxygen gases. Under normal circumstances, a battery should not be charged at a voltage above its gassing voltage since this will cause the battery to lose electrolyte and dry out over time. Therefore the Truecharge 10 transfers to the next step, known as the *absorption charge*.

During the absorption charge, the charging voltage is held constant near the gassing voltage and the charging current is steadily decreased. When the charging current has decreased to approximately one ampere, the battery is fully charged. At this point, the Truecharge 10 transfers to its final step, known as the *float charge*.

The float charge is a maintenance mode in which the Truecharge 10 output voltage is reduced to a lower level, typically about 13.5 volts, to maintain the battery's charge without losing electrolyte through gassing. Unlike many other chargers, the Truecharge 10 can be left connected to your battery indefinitely without risk of overcharging.

The voltage levels mentioned in the paragraphs above are dependent on the type of battery (sealed vs. flooded) and on the temperature of the battery. The Truecharge 10 is equipped with selector switches to allow you to set it for your battery type and temperature.

Charger Operating Sequence

The microprocessor in the Truecharge 10 is constantly checking to ensure that the charger is working properly.

Once AC power is connected to the Truecharge 10, the microprocessor begins by checking whether a battery is connected properly to the charger. The Truecharge 10 will only start charging if the following

conditions are met:

- A battery is connected
- The battery is connected with proper polarity
- The battery voltage is between 5 volts and 13 volts

The Truecharge 10 will not act as a battery eliminator or power supply. It must be connected to a battery to operate.

Once the Truecharge 10 detects proper connection to a battery, it begins the three-step charging cycle. The Truecharge 10 will stop charging if it detects the following conditions:

- Battery voltage less than 10 volts or greater than the gassing voltage
- Internal charger temperature greater than 70 °C

The Truecharge 10 will automatically start charging again if it detects that the battery voltage or charger temperature have returned to safe levels.

The Truecharge 10 completes the absorption charge and goes to float mode when one of the following two conditions are met:

- Charger output current has dropped below one ampere (flooded type batteries remain at absorption voltage for an additional hour after current has dropped to one ampere)
- The charger has been in absorption charge mode for more than 5 hours.

This “time out” feature protects against situations where a load connected to the battery prevents the charger current from dropping below one ampere.

The Truecharge 10 will leave float mode and start another three-step charging cycle under any one of the following conditions:

- Battery voltage drops below 12.5 volts for more than 15 minutes
- 21 days have passed since the last charging cycle occurred
- The battery has been disconnected for more than 30 seconds and is then reconnected
- AC power has been disconnected for more than 30 seconds.

The first two conditions ensure that the Truecharge 10 keeps your battery “topped up” if it is left permanently connected. The last two conditions ensure that the Truecharge 10 starts in a predictable fashion after you disconnect the battery or the AC power.

WARNING! To reduce the risk of sparking and damage to your Truecharge 10, always disconnect AC power from your Truecharge 10 before connecting or disconnecting the battery or batteries.

Important Safety Instructions

SAVE THESE INSTRUCTIONS. This manual contains important safety and operating instructions for the Truecharge 10 battery charger.

- Do not expose charger to rain, snow, or spray.
 - Use of attachments not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
 - To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
 - 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 an 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 18 AWG (0.8 mm²) or larger and cord is less than 100 feet (30 m) long.
 - Do not operate charger with damaged cord or plug. Replace the cord or plug immediately.
 - Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged in any way. If the charger is damaged, take it to a qualified service person.
 - Do not disassemble the charger. Take it to a qualified service person when service or repair is required. Incorrect reassembly may result in a risk of electrical shock or fire.
 - To reduce risk of electrical shock, disconnect power from the charger
- 10

before attempting any maintenance or cleaning.

WARNING! RISK OF EXPLOSIVE GASES.

WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION. FOR THIS REASON IT IS OF UTMOST IMPORTANCE THAT YOU READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS EXACTLY.

- To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and the manufacturer of the equipment in which the battery is installed.
- Do not use this charger in a compartment in which ignition-protected equipment is required.

Personal Precautions

- Someone should be within range of your voice and close enough to come to your aid when you work near a lead-acid battery.
- Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
- Wear complete eye protection and clothing protection. Avoid touching eyes while working near the battery.
- 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 20 minutes and get medical attention immediately.
- NEVER smoke or allow a spark or flame in the vicinity of the battery or engine.
- Be extra cautious to reduce the risk of dropping a metal tool on the battery. It might spark or short-circuit the battery or other electrical part that may cause an explosion.
- Before working with a lead-acid battery, remove personal metal items such as rings, bracelets, necklaces, and watches. A lead-acid battery produces a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- Use the charger for charging a LEAD-ACID battery only. Do not use

this battery charger to charge nickel-cadmium (Ni-Cd), nickel-metal hydride (Ni-MH), lithium (Li) and dry cell batteries commonly used with home appliances and electronic equipment. These batteries may burst and cause injury to persons and damage to property. The charger is not intended to supply power to an extra-low voltage electrical system without a battery.

- NEVER charge a frozen battery. Charging a battery when its temperature is below 32 °F (0 °C) is inefficient and ineffective. If possible, warm the battery above 32 °F (0 °C) before charging.

Preparing to Charge

- 1) If it is necessary to remove the battery from its installed position to charge, always remove the grounded terminal from the battery first. Make sure all loads connected to the battery are off, so as not to cause an arc.
- 2) Be sure the area around the battery is well ventilated while the battery is being charged. Gas can be forcefully blown away by using a piece of cardboard or other non-metallic material as a fan.
- 3) Clean the battery terminals and ensure that connections are secure. Be careful to keep corrosion from coming in contact with eyes.
- 4) If you are charging a flooded battery, add distilled water to each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. Never allow battery acid to drip on charger when reading specific gravity or filling battery. For a battery without cell caps, carefully follow the manufacturer's recharging instructions.
- 5) Study and follow all battery manufacturer's specific precautions such as removing or not removing cell caps while charging, and recommended rates of charge.
- 6) Ensure that battery voltage is 12 volts (nominal) by referring to battery manufacturer's information, or manual for equipment in which battery is installed. Do not attempt to charge a battery which is not rated at 12 volts.

DC Connection Precautions

- Connect DC output clips only after the AC cord is connected to the electrical outlet and the charger indicator lights turn on. The charger has an anti-sparking feature that only functions properly if the charger is on.
- Attach clips to battery posts and twist or rock back and forth several times to make a good connection. This tends to keep the clips from slipping off the terminals and helps to reduce risk of sparking.
- Disconnect DC output clips only after the AC cord is disconnected from the AC outlet.

Permanent Installation

Location

The Truecharge 10 should be installed in a location that meets the following requirements:

- 1) **Dry**—Do not allow water or other fluids to drip or splash onto the Truecharge 10. **Do not mount the charger in an area subject to splashing bilge water.**
- 2) **Cool**—Ambient air temperature should be between 32 °F (0 °C) and 104 °F (40 °C)—the cooler the better.
- 3) **Ventilated**—Do not operate the charger in a closed-in area or restrict ventilation in any way. Allow at least 4 inches (10 cm) of clearance around the Truecharge 10 for air flow. If mounting in a compartment, ventilate the compartment with louvers or cut-outs.
- 4) **Safe**—Do not install the Truecharge 10 in the same compartment as batteries or in any compartment capable of storing flammable liquids such as gasoline. Do not use the Truecharge 10 in an engine compartment or other location where ignition protected equipment is required.
- 5) Locate the charger as far away from the battery as the DC cables permit.
- 6) Never place the charger on or directly above the battery being charged. Gases from the battery will corrode and damage the charger.
- 7) Never allow battery acid to drip on the charger when reading specific gravity or filling the battery.
- 8) Do not set a battery on top of the charger.

CAUTION! To reduce risk of fire, do not cover or obstruct the ventilation openings. Do not install the Truecharge 10 in a zero-clearance compartment. Overheating may result.

WARNING: This equipment contains components that may produce arcs or sparks. To prevent fire or explosion, do not install in compartments containing batteries or flammable materials or in locations that require ignition-protected equipment.

Temporary Mounting

The Truecharge 10 may be temporarily mounted during charging, using the keyholes and holes provided. Mounting hardware should be corrosion resistant #8 (4mm) screws.

The Truecharge 10 may be mounted on a flat, horizontal or vertical surface. If mounting on a vertical surface such as a wall, the orientation should be horizontal, with the keyholes at the top.

Battery Charging Safety

Charging a battery when it is installed in an engine compartment

To reduce the risk of a spark near the battery:

- 1) Position AC and DC cords to reduce risk of damage by access doors, hood, or moving engine parts.
- 2) Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
- 3) Ensure that the compartment has been ventilated to remove flammable or explosive gasses such as battery gasses and fuel vapor. Fuel vapor is heavier than air, so forced ventilation is required.
- 4) Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 5) Determine which post of the battery is grounded (connected) to chassis or engine block. If negative post is grounded (as in most systems) see the next item. If the positive post is grounded, see item 7.
- 6) For a negative grounded system, connect POSITIVE (RED) clip from the battery charger to the POSITIVE (POS, P, +) ungrounded post of the battery. Connect the NEGATIVE (BLACK) clip to the engine block away from the battery. Do not connect the clip to the carburetor, fuel lines, or sheet metal body parts. Connect to an unpainted, clean, heavy-gauge metal part of the frame or engine block.
- 7) For a positive grounded system, connect the NEGATIVE (BLACK) clip from the battery charger to the ungrounded NEGATIVE (NEG, N, -) post of the battery. Connect the POSITIVE (RED) clip to the engine block away from the battery. Do not connect the clip to the carburetor, fuel lines, or sheet metal body parts. Connect to an unpainted, clean, heavy-gauge metal part of the frame or engine block.
- 8) See the operating instructions for the length of charge information.

Charging a battery when it is installed outside the engine compartment

To reduce the risk of a spark near the battery:

- 1) Check the polarity of the battery posts. The POSITIVE (POS, P, +) battery post usually has a larger diameter than the NEGATIVE (NEG, N, -) post.
- 2) Connect the charger to AC power. When the lights on the charger begin to blink, connect the POSITIVE (RED) charger clip to the positive (POS, P, +) post of the battery.
- 3) Connect the negative (BLACK) charger clip to the negative (NEG, N, -) post of the battery.
- 4) As a precaution, do not face the battery when making the final connection.
- 5) When disconnecting, disconnect the AC power to the charger first, then disconnect the negative (BLACK) charger clip while you are as far away from the battery as possible. Disconnect the positive (RED) charger clip last.
- 6) See the operating instructions for the length of charge information.

Grounding and AC Power Cord Connection Instructions

The charger should be grounded to reduce the risk of electrical shock.

The charger is supplied 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.

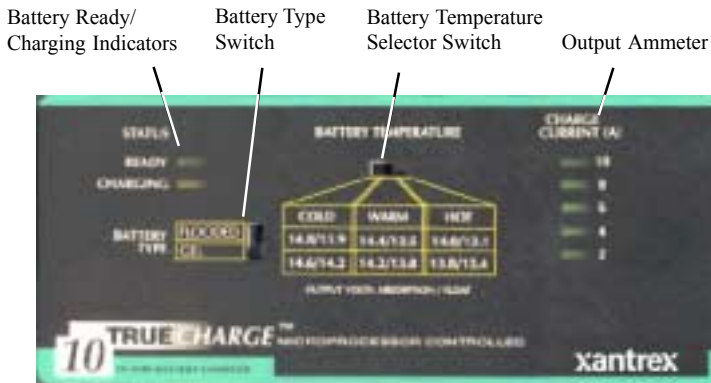
Danger: Never alter the supplied AC cord or plug if it will not fit the outlet. Have a proper outlet installed by a qualified electrician. Improper connection can result in risk of an electric shock.

Operating Instructions

Charge Cycle

The Truecharge 10 can charge all 12 volt lead-acid batteries including sealed, maintenance-free, and gel types. It is best suited for batteries with capacities between 25 ampere hours and 200 ampere hours. (battery sizes from U1 to 4D).

Charging is automatic. The READY status indicator on the Truecharge 10 will light when charging is complete. You can leave the Truecharge 10 connected to the batteries and to AC power even after charging is complete—there is no danger of overcharging.



Truecharge 10 Top Label—Switch and LED Descriptions

Operating Procedure

To charge your battery follow these steps:

- 1) If possible, disconnect all loads from the battery, by removing battery cables, by opening a battery disconnect switch, or by switching loads off.
- 2) Set the BATTERY TYPE selector switch to the type of battery you are charging. If your battery has removable caps that allow you to add water, it is a flooded type, and the switch should be set to FLOODED. If your battery is sealed and has no caps, set the switch to GEL. The Truecharge 10 should be set for GEL for all sealed batteries, even if they use starved-electrolyte technology rather than gelled electrolyte technology.

- 3) Set the BATTERY TEMPERATURE selector switch for the temperature of your battery. If your battery temperature is below 50 °F, (10 °C), set the switch to COLD. If your battery temperature is between 50 °F (10 °C) and 80 °F (27 °C), set the switch to HOT.
- 4) Attach the supplied AC power cord and connect the Truecharge 10 to AC power (90 VAC to 130 VAC 50/60 Hz. The indicator lights on the Truecharge 10 will begin blinking in sequence. The Truecharge 10 may take up to one minute to begin charging.

IMPORTANT: Connect the Truecharge 10 to AC power before connecting the battery. This will prevent arcing when connecting the battery.

- 5) Ventilate the area around the battery thoroughly. Connect the Truecharge 10 to the battery. Ensure proper polarity: RED clip to the positive (+) terminal and the BLACK clip to the negative (-) terminal. The Truecharge 10 is protected against reverse connection. It will not begin charging if the battery is incorrectly connected.
- 6) The Truecharge 10 will now start charging the battery, as indicated by the yellow CHARGING indicator lighting.
- 7) During charging, the charging current will be indicated by the CHARGE CURRENT lights. When charging a discharged battery, the 10 A indicator will be on for most of the charging cycle. Near the end of the cycle, the charging current will decrease and the 8 A, 6 A, and 2 A indicators will come on in sequence.
- 8) When the green READY indicator lights, the battery is fully charged and ready for use. While the READY indicator is on, the Truecharge 10 is in its float charge mode, and will maintain the battery's charge if it is not disconnected.
- 9) **IMPORTANT:** To disconnect the Truecharge 10 from the battery, first disconnect the AC power, then disconnect the battery clips. This will prevent arcing. Also be sure to ventilate the area around the battery thoroughly before disconnecting.

Charging Times

Charging time will depend on the capacity of your battery and on how deeply it is discharged. The following equation gives an approximate charging time:

$$\text{Charging time} = \frac{CAP \times DOD}{850}$$

where:

Charging Time = Battery recharge time in hours

CAP = Battery capacity in ampere hours

DOD = Battery depth of discharge in % (A fully discharged battery has 100% DOD)

Example:

The battery is a Group 27 size with a rated capacity of 80 ampere-hours. It is 80% discharged (i.e. DOD = 80). Charging time with a Truecharge 10 will be:

$$\frac{80 \times 80}{850} = 7.5 \text{ hours}$$

Care and Maintenance

Your Truecharge 10 contains solid-state electronic components that require no maintenance. The best care you can give your Truecharge 10 is to protect it from contact with liquids, spray, or fumes that may cause corrosion. Clean the case and cords with a damp cloth if you suspect contact with battery fluid, salt water, gasoline or oil, or other corrosive material. Corrosion on the clips may be removed with a solution of water and baking soda.

CAUTION! RISK OF ELECTRICAL SHOCK. The Truecharge 10 contains no user-serviceable components. Do not open the unit or attempt to service the unit. Contact your dealer or the manufacturer for service information.

Troubleshooting

Problem	Possible Cause	Solution
Indicator lights are all off when charger is connected to an AC receptacle.	No power at AC receptacle. Defective cord. Open fuse in charger.	Ensure that power is available at receptacle. Replace wiring. Have charger serviced by qualified person.
Indicator lights continue to scroll when the charger is connected to a battery and AC or “Charging” indicator does not turn on continuously or “Ready” indicator blinks continuously.	Charger does not detect battery for one of following reasons: - poor or no connection - reverse polarity connection - damaged leads - open fuse in charger. Battery voltage too low.	Check polarity and quality of battery connection. If leads are damaged or internal fuse open, have charger serviced by qualified person. Check battery voltage rating. Do not attempt to charge a battery rated 6 volts. If battery is rated for 12 volts, leave connected for 8 hours to see if it will recover. If battery doesn't start charging after 8 hours, it is probably damaged and will not accept a charge.
“Charging” light blinks but does not come on steadily. Other indicator lights are off.	Battery voltage is too high. Battery is connected to another charging source.	Check battery. Do not charge a battery rated at more than 12 volts nominal. Disconnect or turn off other charging source (e.g. an alternator).
“10A” indicator light blinks. Other indicator lights are off.	Charger has shut down due to internal overheating.	Allow charger to cool. Improve ventilation or install in cooler location.
Charger appears to be taking too long to charge battery. Ready indicator does not light after 24 hours of charging.	Battery capacity is greater than 200 amp hours. Load connected to battery is draining charge current so that battery does not recharge. Battery has a damaged cell.	Use a higher capacity charger. Disconnect load or switch load off. Replace battery.

Warranty Terms

What does this warranty cover?

This Limited Warranty is provided by Xantrex Technology, Inc. ("Xantrex") and covers defects in workmanship and materials in your Xantrex Truecharge 10. This warranty lasts for a Warranty Period of 12 months from the date of purchase at point of sale to you, the original end user customer.

This Limited Warranty is transferable to subsequent owners but only for the unexpired portion of the Warranty Period.

What will Xantrex do?

Xantrex will, at its option, repair or replace the defective product free of charge, provided that you notify Xantrex of the product defect within the Warranty Period, and provided that Xantrex through inspection establishes the existence of such a defect and that it is covered by this Limited Warranty.

Xantrex will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Xantrex reserves the right to use parts or products of original or improved design in the repair or replacement. If Xantrex repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater. All replaced products and all parts removed from repaired products become the property of Xantrex.

Xantrex covers both parts and labor necessary to repair the product, and return shipment to the customer via a Xantrex-selected non-expedited surface freight within the contiguous United States and Canada. Alaska and Hawaii are excluded. Contact Xantrex Customer Service for details on freight policy for return shipments outside of the contiguous United States and Canada.

How do you get service?

If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Xantrex directly at:

Phone: 1 800 670 0707 (toll free in North America) 1 604 422 2777 (direct)

Fax: 1 604 420 2145

Email: CustomerService@xantrex.com

Direct returns may be performed according to the Xantrex Return Material Authorization Policy described in your product manual. For some products, Xantrex maintains a network of regional Authorized Service Centers. Call Xantrex or check our website to see if your product can be repaired at one of these facilities.

In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Xantrex.

Proof of purchase may be in any one of the following forms:

- The dated purchase receipt from the original purchase of the product at point of sale to the end user, or
- The dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or
- The dated invoice or purchase receipt showing the product exchanged under warranty

What does this warranty not cover?

This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to and Xantrex will not be responsible for any defect in or damage to:

- a) the product if it has been misused, neglected, improperly installed, physically damaged or

- altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;
- b) the product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Xantrex product specifications including high input voltage from generators and lightning strikes;
 - c) the product if repairs have been done to it other than by Xantrex or its authorized service centers (hereafter "ASCs");
 - d) the product if it is used as a component part of a product expressly warranted by another manufacturer;
 - e) the product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

Disclaimer Product

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Exclusions

If this product is a consumer product, federal law does not allow an exclusion of implied warranties. To the extent you are entitled to implied warranties under federal law, to the extent permitted by applicable law they are limited to the duration of this Limited Warranty. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights. You may have other rights which may vary from state to state or province to province.

Warning: Limitations On Use

Please refer to your product user manual for limitations on uses of the product. Specifically, please note that the Xantrex Truecharge 10 is not intended for use in connection with life support systems and Xantrex makes no warranty or representation in connection with any use of the product for such purposes.

Return Material Authorization Policy

Before returning a product directly to Xantrex you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

When you contact Xantrex to obtain service, please have your instruction manual ready for reference and be prepared to supply:

- The serial number of your product
- Information about the installation and use of the unit
- Information about the failure and/or reason for the return
- A copy of your dated proof of purchase

Return Procedure

1. Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.
2. Include the following:
 - The RMA number supplied by Xantrex Technology Inc clearly marked on the outside of the box.
 - A return address where the unit can be shipped. Post office boxes are not acceptable.
 - A contact telephone number where you can be reached during work hours
 - A brief description of the problem
3. Ship the unit prepaid to the address provided by your Xantrex customer service representative.

If you are returning a product from outside of the USA or Canada

In addition to the above, you **MUST** include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

If you are returning a product to a Xantrex Authorized Service Center (ASC)

A Xantrex return material authorization (RMA) number is not required. However, you must contact the ASC prior to returning the product or presenting the unit to verify any return procedures that may apply to that particular facility.

Specifications

Output current:	10 amps continuous duty
Output voltage	
Charge:	14.2–14.4 VDC (depending on setting)
Float:	13.5–13.8 VDC (depending on setting)
Input voltage:	120 VAC nominal (90–135 VAC) 50/60 Hz
Efficiency:	85%
Weight:	3 lbs. / 1.4 kg
Dimensions (L x W x H):	9" x 6.5" x 2.75" 23 cm x 16.5 cm x 7 cm
Output Fuse:	15 A, 32 V, automotive blade type

IMPORTANT! Disconnect all power to charger, including batteries, before replacing fuses.

Specifications subject to change without notice.

Xantrex Technology Inc.

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