The Equalizer® Battery Charger Operator’s Manual

1100 Watt Battery Charger for 24V, 36V, and 48V Systems

For technical assistance or questions related to the Equalizer® Battery Charger, call Customer Service: 1-330-245-5816

Read the entire manual prior to using the Equalizer® Battery Charger. Follow all instructions contained herein.

Part Number: 60K0008
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Important Safety Information

General Warnings

This manual contains important safety, operating, and installation instructions for the Equalizer® Battery Charger series. Please save this manual and read it before operating or using charger. Read and understand all safety precautions before operation or maintenance. Improper practices or carelessness can cause burns, cuts, other bodily injury, or death.

**WARNING**

Working near lead-acid battery packs is dangerous. Batteries generate explosive gases during normal battery operation. It is of the utmost importance that before using your charger, you read and follow the instructions provided exactly. To reduce risk of battery explosion, follow these instructions and those marked on the batteries.

- Only use the charger for charging lead-acid batteries: flooded, AGM, or Gel, depending on the selected algorithm.
- This charger can also charge Lithium Ion batteries. Contact your equipment supplier or battery charger distributor for information on lithium battery charging. Imperial Electric can develop lithium charging solutions with you.
- Never charge a frozen battery.
- Do not operate the battery charger in a closed-in area or restrict ventilation in any way.
- **Do not** touch the uninsulated portions of the battery connector or uninsulated battery terminals as there is a risk of electric shock.

**WARNING**

Charge only 24, 36, or 48-volt lead acid battery packs with a matching-rated battery charger. The battery type must be flooded lead acid (FLA), AGM, or Gel, and the selected charging algorithm must match the battery pack voltage and capacity. Otherwise, the batteries may be damaged and could cause personal injury and further damage.

- Only competent adults who have read and understood the contents of this manual should install, use, or service this charger.
- **Do not** remove the back cover. The capacitors store hazardous energy. There are no user serviceable parts inside the charger.
- **Do not** smoke or allow an open spark or flame in the vicinity of the battery pack.
- **Do not** cause sparking or use open flame near the battery pack.
- **Do not** use the charger near fuels, grain dust, solvents, or other flammables. Chargers can ignite flammable materials and vapors.
- Read and understand these manufacturer’s instructions and your employer’s safety practices.
In some situations, a spark near a battery pack may cause a battery explosion. To reduce risk of a spark near the battery:

- Position the AC and DC cords to reduce risk of damage by the equipment.
- Check the polarity of the battery posts. The positive battery post is usually marked (Batt +) or (Pos +). The negative battery post is usually marked (Batt –) or (Neg -). Check the cables as well. There may be color coding on the cables.
- Always connect the charger’s AC supply cord to a grounded, 3-prong electric outlet.

**WARNING**

**CAUTION**

- The AC line connected to the charger must be capable of supplying 12 amperes to the charger.
- To reduce the risk of fire, use these chargers only on circuits provided with a maximum of 15-amp branch circuit protection (circuit breaker or fuse), in accordance with *NEC Handbook* and *NFPA No. 70*, and all local codes and ordinances.
- The use of an extension cord with the charger should be avoided. The use of an improper extension cord could result in a risk of a fire or electric shock.
- The convection and fan-cooled design requires an unobstructed flow of cooling air for proper operation.
- Keep clothing, plastic, paper, or any flammables away from charger at all times.
- The charger may get hot in operation. This is normal. The charger must be installed such that risk of contact by people is reduced.
- **Do not** disconnect the DC cord set plug from the charging receptacle when the charger is charging. If the charger must be stopped, first disconnect the AC power supply cord from the AC outlet. Then, disconnect the charger DC cord set plug from the charging receptacle.
- Study all manufacture-specific battery precautions, such as recommended rates of charge and removing or not removing battery cell caps.
- Prepare for Emergencies. Be prepared for possible injury or fire.
- Keep the following items handy: First Aid Kit, Fire Extinguisher, and Emergency Phone Numbers.
- Whenever removing the AC or DC cord set plugs from receptacles, pull from the body of the plugs and not from the respective cords.
- Visually and manually inspect to verify that the DC output cord, DC output plug, and AC cord plug are in good working condition before each use.
**WARNING**

Do not use the charger if:

- The DC charging receptacle does not grip the DC cord set plug tightly, is loose, or does not make a good electrical connection.
- The DC cord set plug or charging receptacle feels hotter than normal.
- The DC cord set plug or charging receptacle contacts are bent, corroded or are dark or bluish in appearance;
- The DC cord set plug, cords, receptacle or equipment charging wiring are cut, worn, broken or have any exposed conductors.
- The DC cord plug, cords, charger, or receptacles are damaged or distressed in any way.

Using the charger with any of these symptoms could result in a fire, property damage, or personal injury.

**Installation Warnings**

**WARNING**

- The battery charger power cord must be connected to a single-phase (3-wire) outlet that has been properly installed and grounded in accordance with all local codes and ordinances.
- Improper connection of the equipment-grounding conductor can result in a risk of an electric shock.
- The battery charger’s AC and DC cord sets may not be safely repaired or replaced.
About the Equalizer® Battery Charger

The Equalizer® Series Battery Charger provides the unique combination of industry-leading charging currents and efficiency, with an optional external fan that ensures cooler-running electronics for increased reliability. Full-power rated at a 40C ambient makes it perfect for hot environments while maintaining exceptional power output.

Product Information

### Mechanical

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>31.5 x 18.2 x 8.8 cm (12.4 x 7.2 x 3.5 in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>5.44 kg. (&lt; 12.0 lbs.)</td>
</tr>
<tr>
<td>AC Input Connector</td>
<td>IEC320 / C14 (requires country-specific cord)</td>
</tr>
<tr>
<td>DC Output Connector</td>
<td>OEM specific with 10 AWG wire</td>
</tr>
<tr>
<td>Battery Types</td>
<td>Lead Acid (Flooded/AGM/GEL) &amp; Lithium Ion*</td>
</tr>
<tr>
<td>Battery Pack Sizes</td>
<td>55 – 420 Amp-Hours</td>
</tr>
</tbody>
</table>

*Imperial Electric can work with you to develop lithium charging profiles.

### Environmental

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>IP66 (NEMA4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +65°C (-40°F to 149°F)</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40°C to +70°C (-40°F to 158°F)</td>
</tr>
</tbody>
</table>

### AC Input

<table>
<thead>
<tr>
<th>AC Input Voltage Range</th>
<th>85-265 VAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated AC Input Voltage</td>
<td>120-240 VAC</td>
</tr>
<tr>
<td>AC Input Frequency</td>
<td>45-65 Hz</td>
</tr>
<tr>
<td>Rated AC Input Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Rated AC Power Factor</td>
<td>&gt; 0.99 @ 120 VAC / &gt; 0.98 @ 230 VAC</td>
</tr>
</tbody>
</table>

### DC Output

<table>
<thead>
<tr>
<th>Nominal DC Output Voltage</th>
<th>24 VDC</th>
<th>36 VDC</th>
<th>48 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated DC Output Current</td>
<td>35A</td>
<td>30A</td>
<td>22A</td>
</tr>
<tr>
<td>Maximum DC Output Power</td>
<td>1100W (with fan) 850W (without fan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse Polarity</td>
<td>Electronic Protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Circuit</td>
<td>Electronic Current Limit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4
<table>
<thead>
<tr>
<th>Regulatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
</tr>
<tr>
<td>Energy Efficiency</td>
</tr>
<tr>
<td>California Energy Compliance</td>
</tr>
<tr>
<td>Emissions</td>
</tr>
<tr>
<td>FCC Part 15/ICES 003 Class A, EN55011</td>
</tr>
<tr>
<td>Immunity</td>
</tr>
<tr>
<td>EN 61000 3-3, EN 61000 6-2, EN 61000 6-4</td>
</tr>
<tr>
<td>Ingress Protection</td>
</tr>
<tr>
<td>IP66</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>(with fan)</td>
</tr>
<tr>
<td>1024F04N00</td>
</tr>
<tr>
<td>1036F04N00</td>
</tr>
<tr>
<td>1048F04N00</td>
</tr>
<tr>
<td>1024F01N00</td>
</tr>
<tr>
<td>1036F01N00</td>
</tr>
<tr>
<td>1048F01N00</td>
</tr>
</tbody>
</table>
Charger Dimensions

**Top View**

- **White Wire (optional Thermistor)**
  - Amp connector, .250" tab.
  - See notes on page 8.

- **Green Wire (optional Interlock)**
  - Amp connector, .187" tab.
  - See notes on page 8.

**Side View**

<table>
<thead>
<tr>
<th>Connector Part</th>
<th>Description</th>
<th>Amp Connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE Amp 2-520405-2</td>
<td>Optional Thermistor (White Wire)</td>
<td>.250&quot; tab</td>
</tr>
<tr>
<td>TE Amp 2-520403-2</td>
<td>Optional Interlock (Green Wire)</td>
<td>.187&quot; tab</td>
</tr>
</tbody>
</table>
Operation and Safety Overview

**WARNING**

Do not use ground adapters or modify the plug. Do not open or disassemble the charger. Do not operate this charger if the AC supply cord or the DC output cord is damaged, or if the charger appears damaged.

This charger is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge on electrical systems and battery charging, unless they have been given supervision or instruction concerning use of the charger by a person responsible for safety. Children should be supervised to ensure they do not play with the charger.

Safe Operation Guidelines

The charger contains up 20 selectable charging profiles stored in its internal memory to charge batteries. These profiles are specific to each manufacturer and model of battery. Your equipment supplier or charger distributor is responsible for ensuring the list of available profiles includes one that matches your battery pack. Contact them with any questions about which profile to select for each pack.

1. The charger may become hot during charging. This is normal. Use hand protection to safely handle the charger during charging.
2. The unit automatically reduces output power if the temperature rises above set thresholds, or if the AC input voltage is too low. The charger also reduces output power if it detects damage to the battery pack.
3. If power is interrupted, and then returns, the charger will restart and continue to operate without hazard to the user, or damage to the batteries.
4. Unplug the charger from both AC and DC sources when cleaning, moving, or conducting any maintenance or repair on the charger. There are no user serviceable parts inside. Due to the risk of electrical shock, do not remove the cover.
5. When cleaning the vehicle or machine, avoid exposing the charger to excess oil, dirt, mud, or heavy water spray.
6. The AC input power cord set and DC output cord are not user-replaceable. If damaged, do not use the battery charger.
7. If the AC power plug does not match your power outlet, contact the equipment manufacturer, distributor, or Imperial Electric® for the correct AC cord set terminating with a 3-prong plug suitable for your region’s grounded power outlet.
   - In North America (and other 120V AC regions), the AC cord must be a 3-prong conducted, UL Listed/CSA certified, detachable cord set at least 1.8m in length (≥ 6 feet), minimum 16 AWG, and rated SJT; terminated with a 250V, 13A or greater connector.
   - In 220-240V AC regions, the AC cord must be a 3-conductor safety-approved cord set, with 1.5mm² conductors (min.), rated appropriately for industrial use. The cord must be terminated on one end with a grounding-type input plug appropriate for use in the country of destination. Both the plug and connector should be rated 250V, 10A or greater.
   - In Japan, the AC cord must be a 3-prong PSE approved detachable AC cord set terminated with 100V, 15A or greater connector.
8. Extension cords must be 3-wire cords no longer than 30m (100’) at 10 AWG or 7.5m (25’) at 16 AWG, per UL guidelines.
Operating Instructions

Overview

1. Plug in the AC and DC cords shown below. Charging begins automatically when both cords are plugged in.

   ![AC Cord](AC_Cord.png)  
   ![DC Cord](DC_Cord.png)

   AC Cord  
   (US Version Shown)

   DC Cord

2. After the charge is complete, indicated by a green light, the charger may be left connected to both AC and DC connections. Depending on your installation, disconnect the AC or DC connector before using your device.

Notes:

- Upon connection to the AC power source, all three LEDs and the two 7-segment displays will blink for one (1) second. This activity verifies that all segments and LEDs are operational.

- The charging algorithm number will be displayed 3 times after being connected.

- Throughout the operation, the display window will show the status of the charge, including the current delivered to the battery pack.

- When the charger is plugged into AC power without a connection to the battery pack, the assigned charger profile is displayed three (3) times and then goes into Standby Mode.

- When the charger also has a battery pack attached, it will display the charger profile and then immediately execute the charge profile. **Note:** If the charger is placed in Standby Mode by a power interruption, once power is restored the charger will complete the battery charge.

- The Fault / Error Indicator will display a fault condition (in hexadecimal format). For additional information, refer to the Error Message section in Troubleshooting on page 14.

- In case the charger needs to be abruptly stopped, unplug the AC connector first.

- **Interlock:** Some vehicle manufacturers require the use of an interlock wire, to prevent accidentally operating the vehicle while the charger is still connected. The interlock provides low-level power to the vehicle while the charger is connected to AC power, which disables the starter switch until the charger is disconnected. See manufacturer’s instructions on where to install this wire. **Note:** Not all models of the charger will have this option enabled by default.

- **Thermistor:** Battery charger profiles perform best when they can compensate for changes in operating temperature of battery. The battery can be affected by changes in ambient temperature and operating conditions. The operating temperature of the battery affects the optimal voltage to use when charging the battery. The battery temperature is sensed by connecting the supplied ring terminal with integral sensor to the negative most stud of the battery.
Magnetic Wand Access

Magnetic Wand Access is available only when connected to the batteries. It is not functional on AC only.

- The Magnetic Wand, included with most chargers, allows selection of the individual charge profiles for Flooded Lead Acid (FLA), Absorbent Glass Mat (AGM), and Gel type batteries. Selection can only take place at the beginning of the cycle. The charger must be connected to batteries to access the display menu. Power must be removed for 30 seconds to reset the charger.
- Contact your equipment supplier or charger distributor for Approved Charge Profile updates. Contact your equipment supplier or charger distributor if you misplace the Magnetic Wand.

1. To access the display menu, enter the passcode (+, -, +, -). The Sel Opt text will scroll once followed by the first option.

2. There are two menus levels. The Main Menu contains all the options and each option has its own Sub-Menu.

3. Tapping the +/- keys with the wand will scroll through options.
   - Holding the + key selects an option.
   - Holding the – key scrolls up to the previous menu.

4. The following table explains the display menu system.

<table>
<thead>
<tr>
<th>Main Menu</th>
<th>Options</th>
<th>Option Sub-Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scroll Sel Opt once</td>
<td>SA (Select Algorithm)</td>
<td>Scrolls index-Alg ID once, then display index. +/- scrolls through available algorithms. Press and hold + to select. Press and hold - to exit.</td>
</tr>
<tr>
<td></td>
<td>AF (Auto Float)</td>
<td>Scroll &quot;Auto Float ?&quot; once then display &quot;y&quot; option. +/- toggles between &quot;y&quot; and &quot;n&quot;. Press and hold + to select. Press and hold - to exit.</td>
</tr>
<tr>
<td></td>
<td>Cr (CPU reset)</td>
<td>Scrolls &quot;reset CPU?&quot; then &quot;y&quot; option. Press and hold + to reset the CPU. Press and hold - to exit.</td>
</tr>
<tr>
<td></td>
<td>EC (Equalize charge)</td>
<td>Scrolls &quot;EC disabled&quot; once and returns to main menu.</td>
</tr>
<tr>
<td></td>
<td>SF (Show firmware)</td>
<td>Scrolls FW version in a-b-c-d format once and returns to main menu.</td>
</tr>
<tr>
<td></td>
<td>Ed (exit display menu)</td>
<td>Exits display menu interface.</td>
</tr>
</tbody>
</table>
Detailed Instructions

STEP 1: Pre-Test
This step applies tests to the battery pack before charging the batteries. Further charging is prohibited if unsuitable conditions are found, such as reversed battery polarity or over/under voltage limits. The duration of this step is dependent on the condition of your battery – approximately 10 seconds in most circumstances.

If your battery pack is severely discharged to less than 1.75 volts per cell (VPC), then this step can last several hours while the charger tries to revive the battery pack. Refer to the Troubleshooting section on page 13 for additional information.

1. On connection to the battery pack, the 7-segment display will show a selected algorithm number followed by the START and then the charging current value in amps.

2. At this point, the Yellow LED will be ON, the charge will progress, and the display text scrolls “bul.”

STEP 2: Constant Current Charge (Bulk Stage)

1. Yellow LED (charging) illuminates continuously.

2. This indicates that the charger is charging the battery at the full rated output.

STEP 3: Constant Voltage Charge (Absorption Stage)

1. The charger now regulates voltage instead of current. The charger maintains a constant voltage in this stage, while the charge current gradually decreases.

2. During this phase the Yellow LED (charging) illuminates, the Green LED (charged) blinks, and the display text scrolls “Abs.”

STEP 4: Constant Current Charge (Finish Stage)

1. The Yellow and Green LEDs light when the charger has determined that the battery pack has reached 90% capacity.
2. This step ends when the charge is replenished to 100% capacity, and the display text scrolls “Fin.”

3. Charging is completed when only the Green LED (charged) remains illuminated.
   
   **Note:** Many AGM and Gel algorithms will not have a Finish Stage.

**STEP 4a: Optional Charging (Float, Equalizations)**

This step is optional: Charging Algorithms may also enable **Equalizations** and **Float Mode**. Your equipment supplier or charger distributor will determine which charger algorithms and optional modes are available. Optional modes include:

- **Float Mode:** The charger can also be set to execute **Float Mode**, after a successful Finish Stage, wherein the charger will supply a low current to the battery pack.

- **Equalizations:** The charger can be set to perform an Equalization after a set number of charges, or after the next charge, if the charger detects that the battery pack otherwise needs one. If it engages, the charger will operate for an extra set of time after the Finish Stage. The Green LED (charged) remains illuminated during this **Mode**.

**STEP 5: Storage**

After the completion of **Step 3**, and optionally, **Step 4**, and after 14 days have elapsed, the charger will monitor the battery pack during storage, if the DC and AC cords are still plugged in.

When/if the battery pack voltage falls below 2 VPC, the charger will restart a new charge cycle routine (**Step 1 – 4** above), and restore the battery to full capacity.

1. During any part of the 5-Step charging process, if AC power should happen to be disconnected and reconnected, the charger will restart a new charge cycle, resuming quickly from where the charge left off.

2. If the charger finds an abnormal charge condition while charging, it will attempt to shut down and indicate the fault condition by blinking its Red LED.

**Note:** If you encounter a blinking Red LED, refer to the Error Message section on page 14 for a description of the Charge Error Conditions.

3. Upon charge completion, the charger’s DC cord set can now be disconnected from the charging receptacle by grasping the plug body or handle and pulling the plug straight out of the receptacle. (Unplugging the DC cord is not necessary for on-board installations.)
Maintenance

- On models with a fan, keep the fan guard free and clear of debris.
- Periodically check that the fan operates normally.
- Ensure that all cables are intact and undamaged.
- Blow out or remove any debris found in the fins.
- For flooded lead-acid batteries, regularly check electrolyte levels of each battery cell after charging and add distilled water as specified by the battery manufacturer.
- The battery charger is a non-serviceable device, except for fan addition or replacement.

**WARNING**

- To reduce the risk of electric shock, always disconnect the charger’s AC cord set from AC power and its DC cord set plug from batteries before attempting any maintenance or cleaning.
- Follow any other maintenance and safety instructions recommended by the battery manufacturer.

**CAUTION**

- Make sure the charger connections to the battery terminals are tight and clean.
Troubleshooting

This section provides field technicians with recommendations for accurately diagnosing and troubleshooting certain problems experienced by the Equalizer® Battery Charger. To prevent misdiagnosis and unneeded repairs, try these steps first.

General Troubleshooting

⚠️ WARNING

The following guidelines are intended only to determine if there is a problem in the electrical system of the battery charger itself. The battery charger is a non-serviceable device, except for fan replacement.

- **Do not** operate the charger if it is malfunctioning. Personal injury or property damage could result.
- If an abnormal charging condition is detected, the Red LED blinks and charging is stopped due to a Charge Error Condition. You may also encounter error codes displayed on the Red, Yellow, and Green LEDs.
- After a fault condition is detected, the charger needs to be reset. This can be achieved by disconnecting either the AC plug or the DC connector to the battery pack, for 5 seconds.

<table>
<thead>
<tr>
<th>Description</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>The charger does not start. No LEDs illuminate or blink when the AC cord is connected.</td>
<td>No AC power to charger.</td>
<td>Unplug and inspect the AC cord. If undamaged, plug in the AC cord again. Check breaker/fuse and confirm correct voltage at the AC outlet.</td>
</tr>
<tr>
<td>The charger does not start charging when the DC cord set is plugged into the receptacle and the red power LED is on.</td>
<td>Incorrect wiring or disconnection from the DC cord connector, battery pack connector, and battery pack terminals. Battery voltage less than the minimum volts per cell (1.5 VPC).</td>
<td>Ensure polarity for wiring is correct at the DC cord connector, battery pack connector, and battery pack terminals. Check battery pack voltage with voltmeter.</td>
</tr>
<tr>
<td>The charger abruptly stops charging.</td>
<td>Battery or wire connections may be reversed or incorrect.</td>
<td>Confirm that the polarity for wiring is correct from the charger receptacle in the vehicle to all battery terminals.</td>
</tr>
</tbody>
</table>

13
Error Messages

If an abnormal charging condition is detected, the Red LED blinks and charging is stopped due to a Charge Error Condition. You may also encounter error codes displayed on the Red, Yellow, and Green LEDs.

- Fast Blink = 5 every second
- Slow Blink = 1 every 2 seconds

<table>
<thead>
<tr>
<th>Error Type</th>
<th>Red</th>
<th>Yellow</th>
<th>Green</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Voltage High</td>
<td>Fast Blink</td>
<td>Fast Blink</td>
<td>Fast Blink</td>
</tr>
<tr>
<td>Output Overload &amp; Overheat</td>
<td>Slow Blink</td>
<td>Slow Blink</td>
<td>Slow Blink</td>
</tr>
<tr>
<td>Excessive Charging Time</td>
<td>Slow Blink</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Excessive Discharge</td>
<td>Fast Blink</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

Error Type | Cause                                                                 | Operator Action                                                                 |
---         | -----------------------------------------------------------------------|----------------------------------------------------------------------------------|
Battery Voltage High | Charging voltage is surging, DC cord may be connected to a battery pack of higher voltage than the charger rating, or charging system has an internal failure. | Confirm that the nominal battery pack voltage matches the charger rating. Check battery health. Check all terminals and cables for damage or corrosion, and that nuts are tightened correctly on terminals. |
Output Overload & Overheat | Charger may shut down if the output current exceeds rated capacity or the charger temperature is too high. | Confirm that no external load is connected to the battery. Lower the ambient temperature of the charging location. Check all terminals and cables for damage or corrosion, and that nuts are tightened correctly on the terminals. |
Excessive Charging Time | Incomplete charge after exceeding maximum charge time. An external load may be draining energy from the battery while charging, or the battery pack has one or more unhealthy batteries. | Confirm that no external load is connected to battery. Check all terminals and cables for damage or corrosion. Perform the Equalization Routine. |
Excessive Discharge | This error is generated by a condition found during the start up. The error occurs if a severely discharged battery pack did not recharge to 1.75 VPC within 5 hours. | Confirm that no external load is connected to the battery. Check battery health, terminals, and wiring. |

For technical assistance call Customer Service: 1-330-245-5816
Warranty Information

LIMITED WARRANTY

Imperial Electric (IE) extends the following LIMITED WARRANTY to the purchaser and to its customers (collectively referred to as the “Purchaser”) of the enclosed battery charger and components: the charger and components are free from defects in materials and workmanship under normal use, service and maintenance FOR A PERIOD OF 12 MONTHS FROM THE DATE OF ORIGINAL PURCHASE FROM IE OR THE IE DEALER/RETAILER, NOT TO EXCEED 30 MONTHS FROM THE DATE OF MANUFACTURE BY IE. THE FOREGOING WARRANTY IS THE ONLY WARRANTY GIVEN AND NO OTHER WARRANTY IS PROVIDED, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Certain aspects of disclaimers are not applicable to consumer products, i.e., charger and components acquired by individuals and used for personal, family or household purposes (as distinguished from industrial or other purposes). Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

Certain repairs or services are the responsibility of the Purchaser and the Purchaser is expected to pay for them. This warranty does not extend to any losses or damages due to misuse, accident, abuse, neglect, negligence, unauthorized modification or alteration, use beyond rated capacity, or improper installation, maintenance, application or use, including, without limitation, use in a manner contrary to the accompanying instructions or applicable codes.

If within thirty (30) days after Purchaser's discovery of any warranty defects within the above stated warranty period, Purchaser notifies IE or the dealer from whom the battery charger was purchased in writing, IE shall, at its option and as Purchaser's exclusive remedy, repair or replace or refund the purchase price for that portion of the charger and components found by IE to be defective. Failure by Purchaser to give such written notice within the applicable time period shall be deemed an absolute and unconditional waiver of Purchaser's claim for such defects. Purchaser must write or call the dealer from whom the battery charger was purchased for directions regarding the shipment of the charger, with freight prepaid by the Purchaser, to an authorized service location for warranty service. If Purchaser is unable to contact the dealer to obtain sufficient instructions regarding the handling of the battery charger, Purchaser should write IE at the address below, giving the charger model number, the dealer's name, address and number of dealer's invoice; and describing the nature of the alleged defect. Arrangements for warranty service will then be made by IE.

If the battery charger is damaged in transit, Purchaser should file a claim directly with the carrier.

IN NO EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL NIDEC'S LIABILITY TO PURCHASER OR ITS CUSTOMER EXCEED THE PRICE PAID BY PURCHASER FOR THE SPECIFIC BATTERY CHARGER OR OTHER GOODS PROVIDED BY GIVING RISE TO THE CAUSE OF ACTION. IN NO EVENT SHALL NIDEC'S LIABILITY TO PURCHASER OR ITS CUSTOMER EXTEND TO INCLUDE INCIDENTAL CONSEQUENTIAL OR PUNITIVE DAMAGES. WITH RESPECT TO CONSUMER PRODUCTS, SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.