
# OWNER'S MANUAL

# WARNING

**FAILURE TO FOLLOW SAFE OPERATING PRACTICES MAY RESULT IN SERIOUS INJURY OR DEATH.**

**Read this manual in its entirety before attempting to operate the eNVy Neighborhood Vehicle.**

**REMEMBER - YOUR MACHINE IS ONLY AS SAFE AS THE OPERATOR!**

HAZARD CONTROL AND ACCIDENT PREVENTION ARE DEPENDENT UPON THE AWARENESS, CONCERN, PRUDENCE, AND PROPER TRAINING OF THE PERSONNEL INVOLVED IN THE OPERATION, TRANSPORT, MAINTENANCE, AND STORAGE OF THE EQUIPMENT.

This manual provides procedures for minor maintenance, but major repair information can be found in the eNVy Neighborhood Vehicle Service Manual. Major repair should only be performed by an authorized Intimidator Service Dealer.

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# Introduction

## Read this owner's manual

The eNVy neighborhood vehicle is not a toy. It can be hazardous to operate and should never be operated by anyone other than a trained adult. Failure to follow the warnings and instructions in this manual can result in severe injury or death. For any questions on material contained in this manual, contact an authorized dealer for clarification.

## Product Identification Number (PIN)

Your machine's PIN can be found in two places. The first location is under the hood, just above the fuse and relay box. The second location is in the battery compartment on the panel in front of the batteries.


*Figure 1: PIN Label*

# Definitions

Throughout this manual there is content which requires extra attention. These points are especially important for the safety and satisfaction of the owner experience of the eNVy, and are highlighted by the following headlines:

**Danger:**
Indicates a hazardous situation that, if not avoided, may result in serious injury or death

**Warning:**
Indicates a situation that, if not avoided, may result in property damage

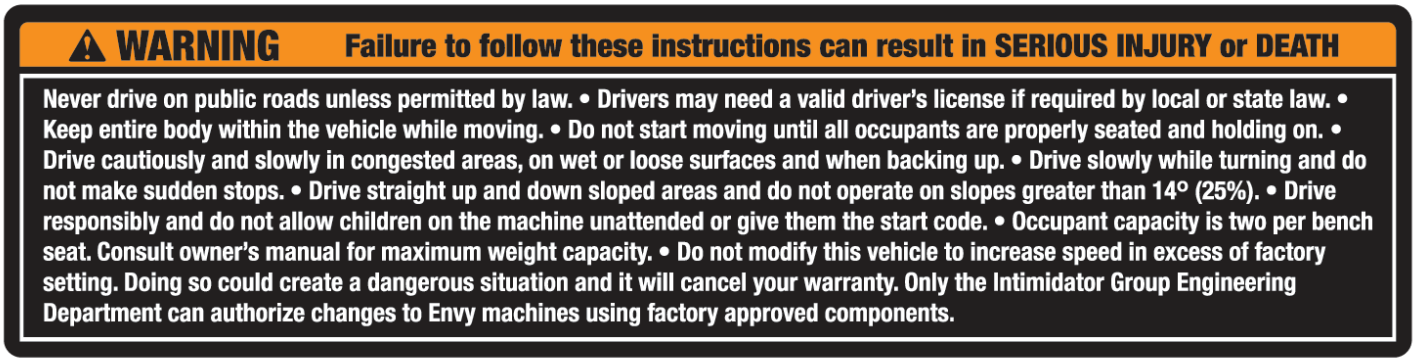
**Notice:**
Indicates a situation that could result in property damage

# Safety

## Safety Labels

For your awareness, warning labels are placed on the vehicle. Read and follow the instructions on the vehicle carefully. If any label becomes illegible or comes off contact your authorized dealer to acquire a replacement.

# eNVy Warning Statement Label

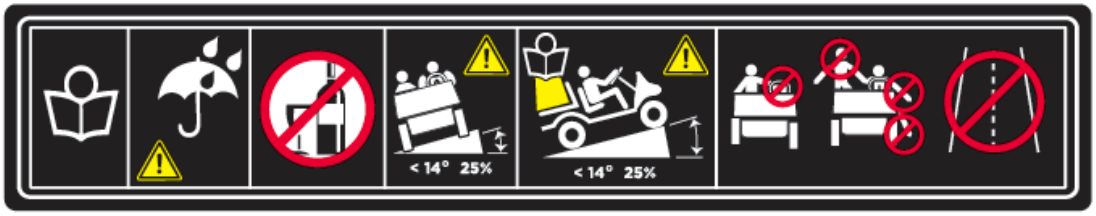



## Warning:

**Failure to follow these instructions can result in SERIOUS INJURY or DEATH**

- Never drive on public roads unless permitted by law.
- Drivers need a valid driver's license as required by local or state law.
- Keep entire body within the vehicle while moving.
- Do not start moving until all occupants are properly seated and holding on.
- Drive cautiously and slowly in congested areas, on wet or loose surfaces and when backing up.
- Drive slowly while turning and do not make sudden stops.
- Drive straight up and down sloped areas and do not operate on slopes greater than 14° (25%).
- Drive responsibly and do not allow children on the machine unattended or give them the start code.
- Occupant capacity is two per bench seat. Consult the owner's manual for maximum weight capacity.
- Do not modify this vehicle to increase speed in excess of factory setting. Doing so could create a dangerous situation and it will cancel your warranty. Only the Intimidator Group Engineering Department can authorize changes to eNVy machines using factory approved components.

**eNVy Warning Pictorial Decal**




**Warning:**

- Read the entire Owner's Manual before operating the eNVy.
- Exercise extra caution when operating the eNVy in inclement weather.
- Do not operate the eNVy while under the influence of alcohol or drugs.
- Do not operate the vehicle on slopes greater than 14°.
- Remain seated and keep all limbs inside the vehicle during operation.
- Never drive on public roads unless permitted by law.

# General Safety

**Never Operate**

- If you are under age 16 or without a valid driver's license.
- At speeds too fast for your skills or conditions.
- While under the influence of alcohol or drugs.
- On hills 14 degrees or steeper.
- With more passengers than seats.
- With passengers on the cargo bed.
- With non-approved accessories or modifications.

**Always**

- Perform a pre-ride inspection prior to operating the eNVy. A checklist is located on the last page of this manual.
- Reduce speed and use extra caution while carrying passengers.
- Avoid sharp turns or turns while applying heavy throttle.
- Operate slowly in reverse and avoid sharp turns or sudden braking.
- Make sure passengers read and understand all safety labels.
- Exercise extreme caution when operating in an area where pedestrians are present
- Do not operate vehicle when lightning is present or in severe weather.

**Operator Safety**

- Always use the proper size and type of tires specified in this manual and maintain proper tire pressure as specified on safety labels.
- Never modify this vehicle through improper installation or use of accessories.
- Never exceed the stated load capacity for this vehicle. Cargo should be properly distributed and securely attached. Reduce speed and follow the instructions in this manual for hauling cargo and allow greater distance for braking.
- Always ensure that the power is “OFF” before attempting to connect the charging cable.
- Do not carry a passenger until you are thoroughly comfortable operating the eNVy.
- Always keep hands and feet inside the vehicle at all times.
- Always inspect the vehicle before each use to make sure it is in safe operating condition. Follow inspection procedures described in this manual.

## Operating a Damaged Vehicle

Operating a damaged vehicle can result in an accident. In the case of an overturn or other accident, have a qualified service dealer inspect the entire machine for possible damage, including (but not limited to) brakes, batteries, and steering systems.

## Operating at Excessive Speeds

On hills it is possible for this vehicle to coast at greater than normal speeds than those encountered on level surfaces. Operating this vehicle at excessive speeds increases the operator's risk of losing control. Limit speeds to no more than the maximum speed on level ground.

## Turning Improperly

Turning improperly could cause loss of traction, loss of control, accident, or overturn. Never turn abruptly or at sharp angles. Never turn at high speeds. Never abruptly accelerate while turning. Always make smooth, controlled movements to complete safe turns.

## Jumps and Stunts

Attempting wheelies, jumps, and other stunts increases the risk of accident or overturn. Never attempt wheelies, jumps, or other stunts.

## Improper Hill Climbing

Climbing hills improperly can cause loss of control or vehicle overturn. Do not climb a hill or drive down a hill with a slope of 15 degrees or more.

**Stalling While Climbing a Hill**
Stalling or rolling backwards while climbing a hill could cause an overturn. Always maintain a steady speed when climbing a hill.

If all forward speed is lost:

- Apply the brakes. Switch the drive system to reverse and slowly allow the vehicle to roll straight downhill while applying light brake pressure to control speed.

If you begin rolling downhill backwards:

- Never apply throttle power
- Apply the brakes gradually until the vehicle is fully stopped.
- Switch the drive system to reverse and slowly allow the vehicle to roll straight downhill while applying light brake pressure to control speed.

**Improper Tire Size, Type, or Maintenance**
Operating this vehicle with improper tire size or type will void the warranty. See your dealer for details. Operating this vehicle with uneven or low tire pressure could cause loss of control or accident. Always use the size and type of tires specified for your vehicle. Always maintain proper tire pressure as described in the owner's manual and on the safety labels.

**Equipment Modifications**
We strongly recommend that consumers do not install any after-market equipment that may increase the speed or power of the vehicle, or make any other modifications to the vehicle for these purposes. Any modifications to the original equipment of the vehicle

create a substantial safety hazard and increase the risk of bodily injury.

**Notice:**

- The warranty of the eNVy will void if any unauthorized equipment is added to the vehicle, or if any modifications are made to the vehicle that increase the speed or power.

The addition of certain accessories may change the handling characteristics of the vehicle. Use only factory approved accessories, and familiarize yourself with their function and effect on the vehicle.

UNDER FEDERAL LAW modified this vehicle to become a Low Speed Vehicle (LSV) is subject to the strictures and requirements of Federal Motor Vehicle Safety Standard 571.500. In these instances, pursuant to Federal law the Distributor or Dealer MUST equip the product with headlights, rear lights, turn signals, seat belts, top, horn, and all other modifications for LSV's mandated in FMVSS 571.500, and affix a Vehicle Identification Number to the product in accordance with the requirements of FMVSS 571.565. Pursuant to FMVSS 571.500, and in accordance with the State laws applicable in the places of sale and use of the product, the Distributor, Dealer, or customer modifying the vehicle also will be the Final Vehicle Manufacturer for the LSV, and required to title or register the vehicle as mandated by State law.

eNVy will NOT approve Distributor, Dealer, or customer modifications converting eNVy products into LSV's.

**Ventilation**
Hydrogen gas is generated during battery charging. Hydrogen is explosive in concentrations as low as 4%. To prevent this concentration, ensure that the vehicle is charged in an area with at least five air exchanges per hour at a minimum.

Never charge a vehicle in an area where flames or sparks may be present. Be especially careful of natural gas or propane water heaters and furnaces.

Always use a dedicated circuit for each battery charger. Do not plug other appliances into the same receptacle as the charger during charging.

# Features, Controls, and Operation

## Control Center

The 7” LCD display and surrounding buttons and switches contain the controls necessary to operate the eNVy. The display will allow access to the machine, notify the user of maintenance needs, and help to show relevant information during operation.

**Danger:**

- Do not attempt to operate the display while the vehicle is in motion

**Notice:**

- Do not expose the display to excessive moisture or attempt to clean it with a pressure washer


*Figure 2: eNVy Control Center*

# Ignition

The eNVy is equipped with a push-button start, and is passcode protected to prevent unauthorized use.

*Figure 3: eNVy Power Button*

**Start-Up**

Press the power button at the top-left of the control console and allow the system to boot up. Insert your personal 4-digit passcode and press “Enter” to allow access to the heads-up display.
The default passcode is “1234”. The passcodes for user/operator and owner can be changed from the Menu screen. If both passcodes are the same, then it defaults to the owner. This screen will also provide time, date, and BDI information.

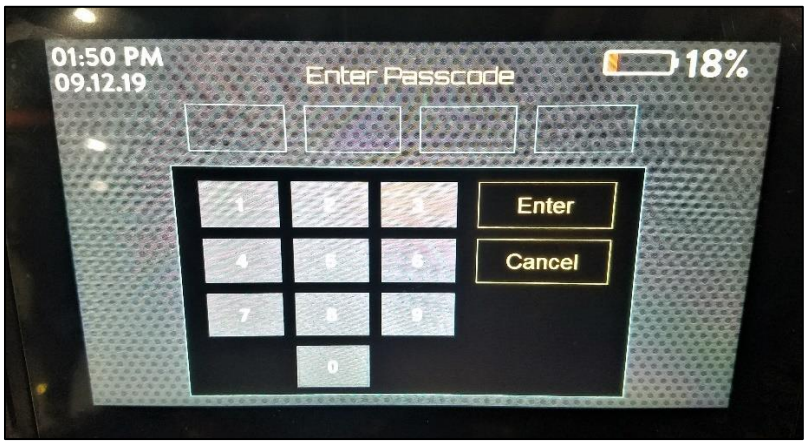



*Figure 4: PIN Input Screen*

The display will accept two passcodes: one for owner and one for user/operator.

**Notice:**

- If an incorrect passcode was entered the soft interlock message won't be communicated to the motor controller and the vehicle would not start and the incorrect passcode window would popup. The user can press cancel to access the main screen. If the user pressed cancel at the passcode screen, none of the buttons on the main screen will be active except the message box which will take the user back to the Enter Passcode screen.

- **Passcode lockout:** if the user enters the passcode incorrectly 5 times, a popup will appear notifying the user that the passcode entry is disabled for 5 minutes. The main screen will then appear, and all touch functions are disabled. After 5 minutes, the user will be able to touch the message box to return to the passcode screen.

- **Reset Passcode Screen:** The reset passcode should be entered when first installing the display in the vehicle and should be printed in the manual or stored elsewhere separate from the vehicle. When the display is first powered up, this screen will appear allowing the installer to enter that reset passcode (a second time as well for confirmation). The display will store this number in memory and will not display that screen again.

  The user will be able to reset the regular passcode by entering the reset passcode. When the user needs to reset the regular

passcode, they will enter the reset passcode screen through a button on the regular passcode screen. The button will only be visible if the regular passcode was entered incorrectly at least once. The reset passcode would be 6 digits. After it's entered, the owner and operator passcodes will be reset to 1234.

- If the reset passcode is lost, there is no way for the owner to reset the regular passcodes. (Please contact dealer)

**Home Screen**

Home screen main items are motor current, speedometer, and BDI gauge (left to right). Battery current is provided as a number only, capable of displaying up to 5 digits with a decimal point. Time and date are provided by RTC incorporated in the Display at the top. Two sets of icons show light switches status inside speedometer body. When BDI level is below 25% the gauge arc becomes yellow and then red when below 10%. If the unit is in "Tow-Mode" the tow icon will flash at a rate of about 1 second on, 1 second off. The other information that is available on the home screen is gear position (N, F, R), total mileage, motor or vehicle hours, charge range to empty battery.

**Fault Screen**
This screen is accessible by touching the message box only when a fault is active. This screen will list active faults.

**Menu Screen**
Menu screen allows the user to change LCD brightness, units of measurement, passcodes, date and time, eNVy logo color, and vehicle settings. Access to changes is restricted based on the passcode entered. Vehicle settings, units, change passcode, clock and date, and eNVy logo color are only accessible with the Owner passcode. The idle timeout can be set to 5, 10, 15min. or off, which will shut off the display if the vehicle is not moving or inputs detected.

Status & Info is a multipage screen with the following pages:

- **Summary / Contact**

- **Motor**

Transaxle Oil Change Default Interval: 600 miles, 1200 miles after first reset. Grease Suspension Joints Default Interval: 100 hours


- **Tires**

Check Tire Pressure Default Interval: 20 hours

- **Battery**

Check Battery Terminals Default Interval: 100 hours Check Battery Levels Default Interval: 20 hours


- **Faults**

Pressing button (Set Reminder) will open this screen where a customer can set all reminders.


- **Vehicle Settings Screen**

The display will store Max Speed, Acceleration and Deceleration parameters in NVM. They can be changed through this screen or through the process described in 10.1.9. Default values for the 3 parameters: Speed: 20; Acceleration: 5; Deceleration: 5.


**Shut-Down**

Ensure that the vehicle is safely stopped on a flat, level surface. Press and hold the power button until the control console turns off.

The eNVy is also equipped with an “Idle Shut-Down” feature which will turn off the console if there is no control input for a set amount of time.

## Battery Meter

**Notice:**

- If the vehicle batteries are low and not allowed to charge for a sufficient period of time, the battery meter may display an incorrect charge percentage.
- When charging, always allow enough time for the batteries to charge completely.

The battery discharge indicator (BDI) is an auxiliary gauge that displays the percentage of battery life remaining, an hour meter, and any error codes present.

# Switches

## Lights

All models come equipped with automotive style headlights.  Press the switch down to turn on the low beam lights. Press the switch up to turn on the high beam lights. To turn the lights off, place the switch into the middle position.


*Figure 5: Headlight Switch*

## Diagnostic Indicators

All of the warnings and lights can be found either on the main screen of the display gauge or under the diagnostics screen. Under diagnostics you will find all of the error codes that you've received.

# Electrical

## Accessory 12V Electrical Outlet and Double USB Port


*Figure 6: 12V and USB Ports*

- This outlet is activated when the power is turned on.
- Do not connect any device that draws more than 120 watts to this connector or the battery may discharge rapidly or the outlet may fail.
- Do not use as a cigarette lighter.
- Do not use when wet.
- Unplug all accessories when the vehicle is turned off.

# Parking Brake

**Warning:**

- Always tie down your vehicle with chains or straps when transporting it on a truck or trailer. Never rely on the parking brake alone. See “Transporting the eNVy.”

The eNVy is equipped with a motor brake which engages when the machine comes to a full stop or when the power is turned off. Always park on level ground. To engage the motor brake, stop the vehicle completely.

# Direction Selection

**Warning:**

- Do not attempt to change direction while the vehicle is in motion.
- Always come to a complete stop and hold the brake before attempting to change direction.

The eNVy is equipped with a direction selector switch at the bottom-left of the control console. Make sure to bring the vehicle to a complete stop before making a direction selection. Press up on the rocker switch to shift into forward, down for reverse, and the middle setting will set the system to neutral, which will engage the motor parking brake.


*Figure 7: Shift Switch*

# Seating

**Danger:**

- Remain seated at all times while the vehicle is being operated.
- Do not attempt to carry more passengers than there are seats on the vehicle.

**Seat Removal and Replacement**

Pull up on the rear of the seat and pull it up and to the rear to disengage the seat tabs. To install the seat, slide the seat tabs into the slots located at the front of the under-seat compartment. Push down firmly on the rear of the seat until the seat is in full contact with the seat base.

# Rear Facing Passenger Seats

**Danger:**

- Remain seated at all times while the vehicle is being operated.
- Do not place fingers or hands between the seat base and cargo bed.
- Exercise caution when mounting and dismounting the rear step. Use the handholds for better stability.

# Tilt Steering

**Warning:**

- Do not attempt to adjust the steering wheel while the vehicle is in motion.
- Bring the vehicle to a complete stop before attempting to adjust the steering wheel position.

*Figure 8: Tilt Steering Adjustment Lever*

The eNVy is equipped with tilt steering that can be adjusted by pulling the tilt steering lever towards you, then moving the steering wheel to the desired position. The tilt steering lever is located on the steering column, directly below the steering wheel.

# Hauling Cargo

**Danger:**

Always follow these precautions when hauling cargo:

- Refer to the cargo bed safety warning label, located in the cargo bed.
- Driving with passengers in the cargo bed can result in severe injury or death. Never allow passengers to ride in the cargo bed. Passengers must always ride in available seats.
- Hauling cargo improperly can alter vehicle handling and may cause a loss of control which can result in serious injury or death.
- Never exceed the maximum weight capacity of the vehicle. When determining the weight that you are adding to the vehicle, include the weight of the operator, passengers, accessories, cargo loads, and the load on the trailer tongue. The combined weight of these items must not exceed the maximum weight capacity.
- Reduce speed and allow greater distances for braking when hauling cargo.
- Always load the cargo box with the load as far forward and as low as possible.
- When operating over rough or hilly terrain, reduce speed to maintain stable driving conditions.
- Always operate the vehicle with extreme care when hauling loads.
- Secure all loads before operating.

- Use extreme caution when applying brakes with a loaded vehicle. Avoid terrain or situations that may require braking downhill. Allow extra distance for braking.

# Flip Down Cargo Area

**Warning:**

- Keep body parts clear of pinch points when flipping the rear seat to prevent pinching or crushing.
- Do not use the cargo configuration to transport passengers.

*Figure 9: Flip-Down Cargo Bed*

# Maintenance

Careful periodic maintenance will keep your vehicle in the safest, most reliable condition. Inspection, adjustment, and lubrication of important components are explained in this section.

Inspect, clean, lubricate, adjust, and replace parts as recommended by the periodic maintenance chart in this manual. When an inspection reveals the need for replacement parts, use genuine eNVy parts, available from your authorized eNVy dealer.

Maintenance intervals in the periodic maintenance chart are based upon average riding conditions. Vehicles subject to severe use must be inspected and serviced more frequently.

## Severe Use Definition

- Operation at extremely high or low temperatures
- Prolonged low-speed, heavy-load operation.
- Frequent or prolonged operation in dusty environments.
- Frequent exposure to mud, water, or sand.

If your vehicle falls under the severe use definition, perform all maintenance at intervals more frequent than stated on the chart.

# eNVy Lubrication and Fluid Chart

Recommended factory fluids

| Item | Lubricant | Quantity | Method |
|---|---|---|---|
| Battery Water Level | Distilled Water | ½" below fill cap neck, no less than ¼" above plates | |
| Brake Fluid | DOT 3 | Between min and max | Maintain level between fill lines |
| Transmission/Gearbox Oil | Valvoline SYN 75W-140 | 750 ml | |

# Periodic Maintenance Schedule

| Item | Interval (whichever comes first) | Remarks |
|---|---|---|
| Clean motor, battery charger and components of debris | Pre-ride | Remove all debris |
| Brake Fluid | Pre-ride | Check level and pressure. Adjust if necessary |
| Steering | Pre-ride | |
| Front Suspension | Pre-ride | |
| Rear Suspension | Pre-ride | |

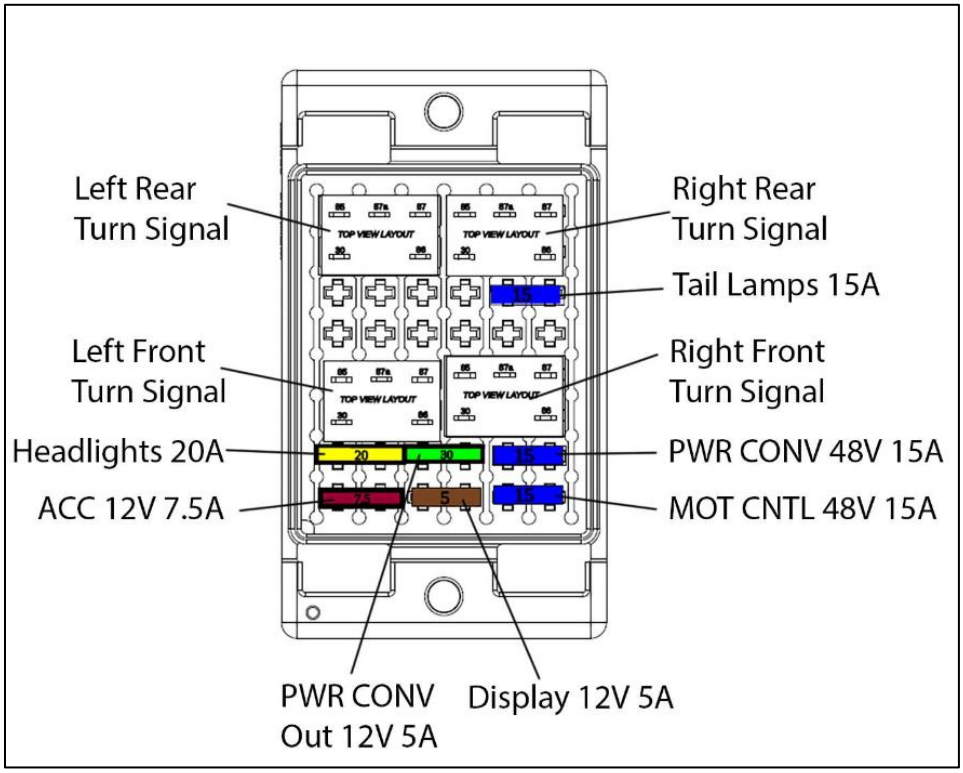
| | | |
|---|---|---|
| Tires | Pre-ride | |
| Wheels/Fasteners | Pre-ride | |
| Frame | Pre-ride | |
| Headlights, Tail Lights | Pre-ride | |
| Axle, Steering Joint Boots | Pre-ride | |
| Battery Water Level | Monthly | Inspect. Add distilled water if necessary |
| Battery Terminals | Monthly | Torque to 14 ft. lb. Apply dielectric grease |
| Brake Pads | 50hr /3 months | Inspect for wear, replace if necessary |
| Transmission/Gearbox Oil | 50hr /3 months | Inspect level, change yearly |
| Front/Rear Suspension | 100hr /12 months | Lubricate polyurethane joints |
| Steering | 150hr /12 months | Inspect, lubricate |
| Throttle | 150hr /12 months | Inspect, lubricate, replace if necessary |
| Wiring | 250hr /24 months | Inspect for wear, apply dielectric grease to connectors subject to water, mud, etc. |
| Brake Fluid | 500hr /24 months | Replace fluid |
| Front Wheel Bearings | 500hr /36 months | Inspect, replace as necessary |
| Toe Adjustment | 500hr /36 months | Inspect, adjust as necessary |

# Fuses and Relays

Fuses and relays can be found in a fuse box under the front hood.


*Figure 10: Fuse Block*

## eNVy Fuse Chart



# Electric Motor

*Figure 11: Electric Motor*

The eNVy is powered by a brushless 48V motor. The motor is water resistant, but is not water proof. If the motor should overheat, the display will show a trouble code indicating the overheat. Stop the vehicle and allow time for the motor to cool down before resuming vehicle operation.

**eNVy Electric Motor Information**

| | |
|---|---|
| **Model** | 48V AC, 5.0kW, brushless |
| **Peak HP** | 14.8 HP |
| **Peak Torque** | 52.2 ft-lb. |

# Controller

**Notice:**

- The controller is water resistant, not waterproof.
- Avoid spraying the controller with high-pressure water.
- Do not submerge the controller.
- Do not attempt open, repair, or otherwise modify the controller.
- Contact your authorized eNVy dealer if error codes display.

The controller, or computer, is the brain of the vehicle. The vehicle's rate of acceleration and deceleration can be adjusted by the owner. If a fault occurs, the controller will display error codes on the digital display.

## Controller LED Status

The two LEDs located on the controller have four different display modes, indicating the type of information they are providing.

## Controller LED Status Chart

| Display | Status | Action |
|---|---|---|
| Neither LED illuminated | Controller is not powered on; or vehicle has dead battery; or severe damage. | If machine will not turn on, or turns on with this indicator, contact an authorized dealer. |
| Yellow LED flashing | Controller is operating normally. | None |
| Yellow and red LEDs both on solid | Controller is in Flash program mode. | None (occurs during software updates) |
| Red LED on solid | Watchdog failure or no software loaded. | Contact dealer |
| Red LED and yellow LED flashing alternately | Controller has detected a fault. | See "Controller Troubleshooting"; contact dealer. |

# Battery Bank Care

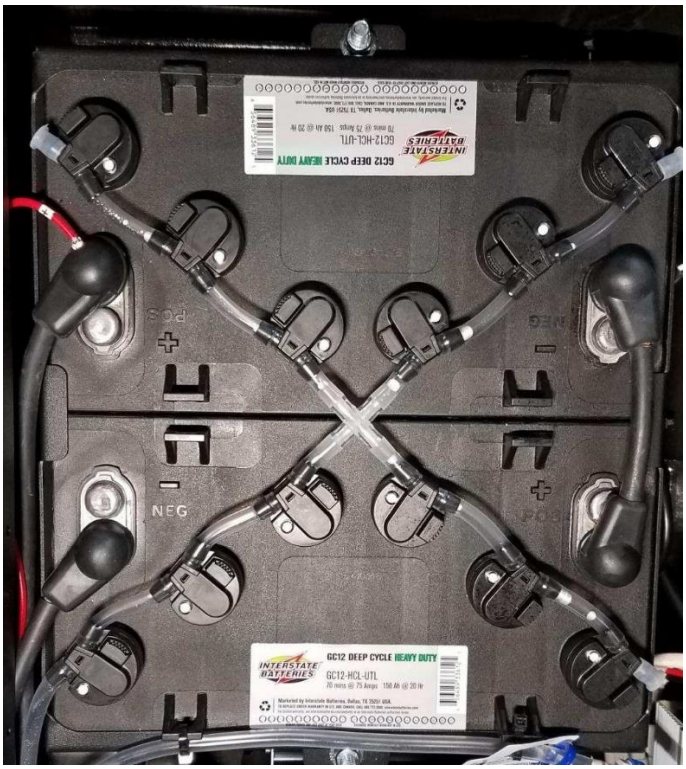



*Figure 12: Electric Vehicle Battery Bank w/ Watering-Kit (2 of 4 Batteries)*

Electric motors and batteries require consistent maintenance to ensure peak performance and longevity.

## Safety

### Warning:

- Flooded batteries contain corrosive acid which can damage material and cause severe chemical burns. Wear the appropriate protective attire and sufficient eye protection while working with batteries.
- Batteries produce flammable hydrogen gas while charging. Ensure that the charging area has sufficient ventilation and keep all sources of flame and spark away from the batteries.
- There is a danger of electric shock when working with electricity. Use insulated tools to perform maintenance to prevent a dangerous short.

**Battery Disposal**
Lead-acid batteries are recyclable. Return whole scrap batteries to the distributor, manufacturer, or lead smelter for recycling. Contact local and/or state environmental officials regarding disposal information.

**Battery Health**
The batteries on the eNVy perform best when recharged fully and often. Recharge the batteries daily or after each use of the vehicle.

**Battery Watering System**
The battery watering system connects directly to all of the batteries in the bank and allows for easy, uniform watering to the exact required level. Each fill spout cover contains a small white indicator that will disappear if the battery level falls below optimal levels. When this occurs, **distilled water** must be added to bring the water levels back up.

To add water to the batteries:

1. Ensure that the vehicle is safely parked on a level surface with the power off.
2. Remove the front seat.
3. Connect the quick-fill hand pump to the blue nozzle on the battery watering kit.
4. Place the other end of the hand pump into a clean, distilled water source and pump until there is resistance within the pump.

5. Check the indicators on the top of the batteries to ensure water levels are correct.
6. Disconnect the quick-fill pump and replace the seat.

**Notice:**

- Do not change the battery model in the machine

In order to gain the highest performance from the eNVy:

- Fully charge the batteries prior to the first use, and keep the batteries fully charged to keep them healthy.
- The batteries will not perform to their fullest capacity until they have been discharged up to 50% and recharged 20-30 times.
- Never discharge the batteries more than 80% of their capacity. Deeply discharging the batteries will shorten their life span.
- Discharged batteries can freeze in freezing temperatures. Do not use, charge, or load test a frozen battery as it could explode.
- Keep batteries fully charged when not in use.
- If you observe ice in the cells, or the case is swollen or split, allow the battery to warm up before testing or charging.
- Do not charge batteries at temperatures of 110° F or higher.
- Range may change depending on terrain, trail conditions, temperature, and driving habits.
- If the electrolyte level is low, add distilled or deionized water up to a maximum of ½” below the bottom of the fill cap neck. Do not overfill.
- Adding too much electrolyte may cause a boil-over during charging. ¼” Over the plates is sufficient.

# Charging System

The eNVy is equipped with an onboard battery charger. When the battery charging system is connected, the battery status indicator, located on the charger toward the rear of the under-seat compartment, will provide charging information utilizing four LED indicators.

**Bluetooth® Wireless**

The charger features Bluetooth wireless communication, which can be accessed using an Apple® or Android™ smart phone, tablet or similar device. Download the ChargerConnect app for your device by scanning the QR code on the charger or visiting the App Store® or the Google Play™ store and searching for “ChargerConnect”.

**Notice:**

- Disconnecting and reconnecting the AC power supply cord will reset the charger.
- Do not attempt to change the battery profile using the ChargerConnect app. Changing the battery profile can cause damage to the batteries and charging system.

## Battery Charging

### Warning:

- Keep the charging area well ventilated and keep all flames and sparks away during charging.
- Utilize a heavy-duty extension cord connected to an outlet of sufficient capacity to charge the machine
- Do not use a ground fault interrupt (GFI) type cord on a GFCI-protected outlet. The circuit should be rated for a minimum of 20 amps.
- The eNVy is equipped with an interlock system that will not allow it to move while the charging cable is plugged in. A small blue plug icon will blink on the display when charging is in process.

**In order to charge the eNVy:**

1. Ensure that the vehicle is safely parked on a level surface with the switch off.
2. Connect the power cord to an appropriate live AC outlet which is indicated by the blue “AC PRESENT” LED turning on. The charger will start automatically as indicated by the yellow “CHARGE STATUS” LED beginning to blink slowly.
3. If the charger must be disconnected from the battery while a charge cycle is in progress, disconnect the AC power cord from the AC outlet.
4. The charge cycle 80% point is indicated by the yellow LED beginning to blink quickly.
5. The finish charge cycle phase is indicated by the solid illumination of the yellow LED. There may be a light Sulphur smell and a soft boiling noise coming from the batteries during this phase. This is normal.

6. An extended balance/equalize charge cycle phase is indicated by the green “CHARGE COMPLETE” LED beginning to blink quickly.
7. The charger automatically terminates the charge cycle when the batteries reach full charge. Which is indicated by either:
    a. The solid illumination of the green LED
    b. The green LED beginning to blink slowly indicating a post-charge phase
8. Before operating the eNVy, disconnect the onboard charger AC power cord from the outlet.

## Storage Mode Operation

Storage Mode is designed to keep your batteries maintained during storage periods that last a few weeks to several months at a time. Do not disconnect the AC power until the machine is needed for use. Disconnecting and reconnecting the charger from the batteries or AC power may start a charge cycle, but disconnection disrupts the storage mode so optimum battery maintenance is not achieved. After several months of storage, the batteries should be serviced and the charger reset by disconnecting the AC power supply for a minimum of 10 minutes before continuing another storage season.

## LED Indicators

The charger has four (4) LEDs to indicate charger status and fault information. LED function is outlined below and in the following table.

- **AC Present (blue)** – Indicates charger is connected to a live AC inlet.
- **Fault (red)** – Indicates when a charger or battery fault has occurred.
- **Charge Status (yellow)** – Indicates charge cycle status.
- **Charge Complete (green)** – Indicates when a charge cycle completes successfully, when an extended balance/equalize charge cycle phase is active, or when a post-charge phase is active.

| Fault (red) LED | Charge Status (yellow) LED | Charge Complete (green) LED | Description |
|---|---|---|---|
| Solid On | Solid On | Solid On | LED check for a few seconds during charger initialization |
| | Slow Blink | Off | Bulk/Start charge cycle phase (constant power or constant currant). |
| | Fast Blink | Off | Absorption/Plateau charge cycle phase (constant voltage). Greater than 80% charged. |
| | Solid On | Off | Finish charge cycle phase (constant current). Not all charge profiles include a Finish phase. |
| | Off | Fast Blink | Balance/Equalize phase. An extended charge cycle is occurring because a trigger condition has been met (cycle count, etc). Not all charge profiles include a Balance/Equalize phase. |
| | Off | Solid On | Charge cycle complete. |
| | Off | Slow Blink | Charge cycle complete. Post Charge phase (constant voltage float, etc). Not all charge profiles include a Post Charge phase. |
| Slow Blink | Slow Blink | Slow Blink | Charger Bluetooth connected to a smart phone or device, LEDs blink at the same time. |

## Charger LED Faults

| | Fault (red) LED | Charge Status (yellow) LED | Charge Complete (green) LED | Description |
|---|---|---|---|---|
| **Charger** | Slow Blink | Solid On | Solid On | DC Disconnect: DC disconnect detected via the third-pin, but DC (battery) voltage is still present at the charger output. |
| | Slow Blink | Off | Solid On | Over Temp: Maximum temperature was met. Charge cycle was halted and will restart when the temperature decreases. |
| | Slow Blink | Fast Blink | Slow Blink | Low Temp: Temperature is too low to start a charge cycle (< -25°C). Charging will start when temperature increases. |
| | Slow Blink | Solid On | Off | Low DC: DC (battery) voltage is too low to start charging (< 10V). |
| | Slow Blink | Off | Off | No AC: AC power was lost during charging. Charge cycle was halted and will restart |

| | | | | |
|---|---|---|---|---|
| | | | | when AC power returns. |
| | Slow Blink | Solid On | Slow Blink | Hardware Fault: Contact dealer. |
| | Slow Blink | Slow Blink | Off | Hardware Fault: Contact dealer. |
| | Slow Blink | Slow Blink | Slow Blink | Comm Fault: LEDs blink one at a time in a rotating pattern. Contact dealer. Unit is still able to charge. |
| | Slow Blink | Slow Blink | Solid On | Hardware Fault: Contact dealer. |
| | Fast Blink | N/A | N/A | Hardware Fault: Contact dealer. Unit is still able to charge. |
| **Battery** | Solid On | Off | Off | Phase: A fault condition (most commonly maximum time) was met during a particular charge cycle phase (start/bulk, plateau/absorption, finish, etc). |
| | Solid On | Off | Slow Blink | Max Voltage: Maximum voltage was met. |
| | Solid On | Off | Solid On | Min Voltage: Minimum voltage was NOT met after a specified time from the start of the charge cycle. |

| | | | | |
|---|---|---|---|---|
| | Solid On | Slow Blink | Off | Max Amp-Hours: Maximum amp-hours for the overall charge cycle was met. |
| | Solid On | Slow Blink | Slow Blink | Max Time: Maximum time for the overall charge cycle was met. |

# Power Converter

The eNVy has a 48V-to-12V power converter that allows 12V electronics to operate off of the main power system. Small electrical accessories, such as lights, can be added with no modification to the electronics system.

# Transmission/Gearbox

Check and change the transmission oil at the intervals outlined in the Periodic Maintenance Chart. Refer to the lubrication and fluid recommendations chart for type and capacity.

**Oil Check**

To check the Transmission/Gearbox oil:

1. Ensure that the vehicle is safely parked on a flat surface.
2. Remove the level check/fill plug. Observe the oil level.
3. Add the recommended oil as required.
4. Reinstall check/fill plug.

## Oil Change

To change the Transmission/Gearbox oil:

1. Ensure that the vehicle is safely parked on a flat surface.
2. Place a drain pan under the gear case.
3. Remove the drain plug and the check/fill plug. Allow the oil to drain completely.
4. Clean and reinstall the drain plug.
5. Add the recommended oil to the appropriate level.
6. Reinstall the check/fill plug.
7. Inspect for leaks.

## Vehicle Submerged in Water

**Notice:**

- If your vehicle becomes immersed in water, major motor damage can result.
- Intimidator warranty does not cover vehicles submerged in water.
- If your vehicle does become submerged above the electric motor, thorough inspection is necessary.
- It is recommended that you take the vehicle to your dealer before turning on the power.

# Headlights

The headlights are controlled by a three-way switch in the dash. The LED light strips are daytime running lights. The outside set of lights are low-beams, while the inside set are the high-beams.

# Brakes

The braking system consists of front hydraulic disc brakes, and rear drum brakes activated by the brake pedal.

**Brake Fluid**

Inspect the brake fluid level before each operation. Always keep the fluid level between the minimum and maximum fill line on the reservoir. Change the brake fluid either every two years, or any time the fluid becomes contaminated.

To change the brake fluid:

1. Ensure that the vehicle is safely parked on a flat surface.
2. Inspect the brake fluid level at the reservoir located in the driver's side wheel well. The level should be between the MAX and MIN indicator lines.
3. If the fluid level is low, remove the cap and fill until the fluid level falls between the indicators.
4. Reinstall the cap.
5. Apply the brake forcefully for a few seconds and inspect for fluid leakage around the fittings.

**Brake Pressure Switch and Safety Switch**

The brake pressure switch is located on the master cylinder. It is not necessary to depress the brake pedal in order to start the machine, but is recommended for safety reasons.

**Brake Inspection**
To inspect the brake system:

1. Visually inspect all hoses and fittings for fluid leaks.
2. Check the brake pedal for excessive travel or a spongy feel.
3. Check the friction pads for wear, damage and looseness.
4. Inspect the brake disc spline and pad wear surface for excessive wear.
5. Change pads when worn to 3/64” (1 mm)

# Tires

**Danger:**

- Installation of non-standard tires, use of oversized tires, or use of different tread patterns can change or impair the handling of the vehicle and result in severe injury.

Tire construction characteristics and inflation pressure can greatly influence vehicle handling. Intimidator recommends that you replace tires with standard OEM tires. It is also important that all tires on the machine are of the same type and height, inflated to the recommended pressure.

**Tire Tread Depth**
Replace your tires when the tread depth is worn to 1/8” or less.

**Lug Nuts**
Torque lug nuts to 65 ft/lb.

# Steering

**Steering Wheel Inspection**

Check the steering wheel for the specified free play and smooth operation at the intervals outlined in the periodic maintenance chart. To inspect the steering wheel:

1. Ensure that the vehicle is safely parked on a flat surface.
2. Lightly turn the steering wheel left and right. There should be no more than 1” of free play.
3. If there is excessive free play, strange noises, or the steering feels rough, have the steering system inspected by an authorized dealer.

# Storage

## Washing the eNVy

**Notice:**

- High water pressure may damage components including wheel bearings, brakes, plastic panels, safety labels, electrical switches, electronic components, and wiring.
- Wash the vehicle by hand or with a garden hose using mild soap.
- Certain products, including insect repellents and chemicals, will damage plastic surfaces. Do not use these types of products.
- Mud can stain the vehicle's seat and plastic. Immediately wash mud off of the vehicle with mild soap and water.

Keeping your vehicle clean will not only improve its appearance, but it can also extend the life of various components. Below are some guidelines for keeping your eNVy clean:

- Avoid the use of harsh or abrasive cleaners that can scratch the finish.
- Use automotive adhesive remover to clean sticker residue from plastic.
- Do not use a pressure washer to clean the vehicle.
- Always use clean microfiber cloths, towels, and pads for cleaning and polishing.
- Replace any safety labels damaged by cleaning immediately.

# Storage

**Notice:**

- Do not store the vehicle in direct sunlight.

**Preparation for Storage:**

1. Thoroughly clean the entire vehicle.
2. Place boards under the tires to keep moisture away from the rubber.
3. Fully charge the batteries. You may leave the charger plugged in if the area has sufficient ventilation to allow gasses to disperse. It is important to regularly check on the vehicle to ensure that there are no charging/electrical issues.
4. Put a cover over the vehicle to keep dust and dirt from collecting, and to discourage small animals from taking up residence. Do not leave the battery charger plugged in when covered. Remove the cover to charge the batteries.

**Removal from Storage:**

1. Remove the cover
2. Clean the battery terminals, charge the battery fully.
3. Check each point listed in the “Pre-Ride Checklist” at the end of this manual.
4. Lubricate any fixtures as required.

# Transporting the eNVy

**Danger:**

- When transporting your vehicle on a trailer or truck bed, secure the vehicle to the trailer/truck by attaching the frame of the vehicle to the trailer/truck using properly rated straps or chains.
- Do not attach straps or chains to the suspension arms.

The best way to transport the eNVy to different locations over the road is to load it onto a trailer or flatbed truck. Below are some considerations while transporting your machine:

- Use extra caution with any and all activities involved with loading, securing, transporting, and unloading your machine.
- Make sure that the trailer/truck is parked safely on flat ground and that the tires are immobilized.
- Do not use a ramp at an angle of more than 14 degrees.
- Use extra care when driving the eNVy up and down the ramps.
- Ensure that the straps/chains used for securing the machine are rated sufficiently for the weight of the machine.

# Tow Procedure

**Danger:**

- Do not attempt to tow an eNVy while on an incline
- Secure the machine prior to initiating any of the towing procedures outlined below.

The procedure for towing the eNVy will vary depending on the state of charge within the batteries.

**To tow an eNVy with battery charge:**

1. Safely attach a sufficiently rated tow strap to a secure location on the eNVy frame.

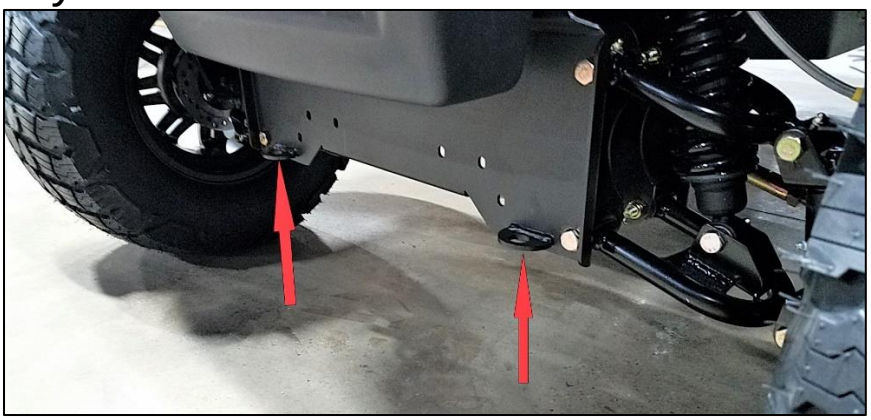


*Figure 12: Front Tow Attachment Points*

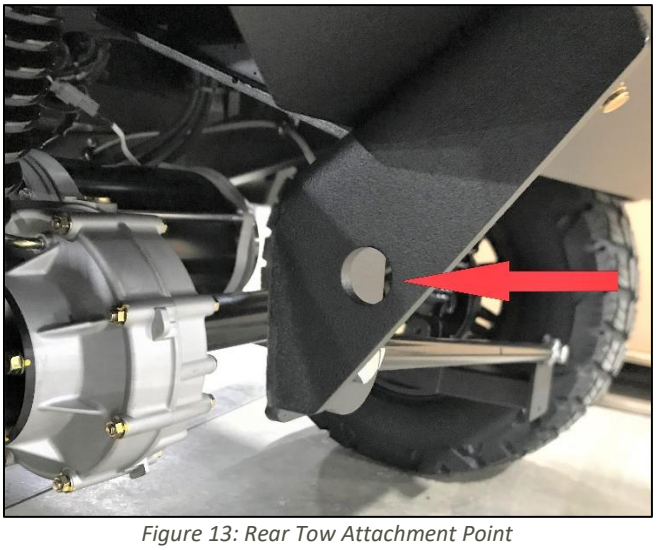


*Figure 13: Rear Tow Attachment Point*

2. Remove the seat to access the battery compartment.
3. Turn the machine on and input owner or user code to view main screen
4. Locate the internal tow switch mounted to the passenger side battery bank, and switch it to the “TOW” position.


*Figure 14: Tow Switch*

5. With an operator in the driver’s seat to control the machine, slowly tow the eNVy to the desired location.
6. Return the tow switch to the “RUN” position to complete towing, and turn the machine off.

**To tow an eNVy with NO battery charge:**

1. Safely attach a sufficiently rated tow strap to a secure location on the eNVy frame.
2. Remove the seat to access the battery compartment.
3. Remove the cap of the two-pin Deutsch connector located near the controller and attach the off-board jump pack (sold separately) to the connector. This will disengage the parking brake.
4. Slowly tow the eNVy to the desired location.
5. Detach the jump pack to complete towing.

# Accessories

For a complete line of genuine eNVy accessories, visit: **www.baddawgaccessories.com.**

# Specifications

| CORE COMPONENTS | |
|---|---|
| **Frame** | Powder Coated, Fusion-Bonded, Solid Steel Frame |
| **Body** | Automotive Quality Acrylic Plastic |
| **Front Tires** | 24x1200R12 – 4 ply |
| **Rear Tires** | 24x1200R12 – 4 ply |
| **Wheels** | 12” Steel |
| **Front Suspension** | Dual A-Arm |
| **Rear Suspension** | Trailing Arm |
| **Steering** | Rack and Pinion |
| **Braking System** | Front Disc and Rear Drum Brakes |
| **Parking System** | Automatically Engaging Electric Brake |
| **Seating** | 2 Forward Facing and 2 Rear Facing |
| **Auxiliary Power** | 12V Auxiliary Plug and Double USB Port |
| **Cargo Bed Space** | 37”x44” (93.9cm x 111.8cm) |
| **Warranty** | 2-year Bumper-to-Bumper |
| **DRIVE SYSTEM** | |
| **Motor** | 48 Volt Brushless |
| **Battery System** | Four 12V Deep Cycle Lead Acid Batteries with Included Watering Kit |
| **Charging System** | On-Board Charging System |
| **Torque (Peak)** | 52.2 ft lb. |
| **Max. Horsepower** | 6.7 hp (5 kW) |
| **Max. Speed** | 20 mph |
| **MEASUREMENTS** | |
| **Weight** | 1,389 lb. (630.0 kg) |
| **Length** | 124” (315.0 cm) |
| **Width** | 55” (139.7 cm) |
| **Height** | 78” (198.1 cm) |
| **Turning Radius** | 115” (292.1 cm) |
| **Wheelbase** | 69” (175.3 cm) |
| **Frame Clearance** | 8” from the trailing arm bracket 14” from the frame |
| **Cargo Bed Capacity** | 450 lb. properly loaded |
| **Vehicle Payload** | 1,000 lb. passengers + cargo |
| **SAFETY** | |
| **Front Protection** | 1.75” (4.5 cm) Diameter Tubing Bumper/Brush Guard |
| **Shift Indicator** | 3 Position Gear Indicator Switch |
| **Headlights** | High and Low Beam Headlights |
| **Brake/Tail Light** | Standard |

# Service Record

| Number | Date | Hour Meter Reading | Dealer Stamp |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |

# Owner’s Reference

(Keep original copy on file at your dealership)

| | |
|---|---|
| **VIN/PIN** | |
| **Model** | |
| **Date of Purchase** | |
| **Dealer** | |

| | |
|---|---|
| **Last Name (owner)** | |
| **First Name (owner)** | |
| **Address** | |
| **City** | |
| **State** | |
| **Postal Code** | |
| **Day Phone** | |
| **Evening Phone** | |

# Pre-Ride Checklist

Complete this checklist before every operation of the Intimidator to ensure a safe and enjoyable ride.

- ☑ **Tires and Wheels**
  - Check condition for cuts or gouges
  - Check for adequate tread
  - Check air pressure and ensure that it is even in all tires
  - Check wheel lugs for tightness
- ☑ **Controls**
  - Adjust steering wheel to ideal position
  - Confirm that brake and throttle pedals operate smoothly
  - Ensure proper brake and parking brake operation
  - Ensure that the gear selector operates properly
- ☑ **Lights**
  - Make sure lights (high and low beams) operate properly as well as brake lights
- ☑ **Fluids**
  - Differential Oil – check level and condition
  - Leaks – inspect inside and underneath the machine for evidence of fluid leaks
- ☑ **Chassis and Accessories**
  - Ensure all shocks, fasteners, and undercarriage are free from damage and securely fastened
  - Check A-Pillar and B-Pillar for secure attachment and damage
  - Inspect all accessories for secure attachment and damage

# Golf Cart Battery

## *Install & Maintenance*



INTERSTATE BATTERIES®

Outrageously Dependable®

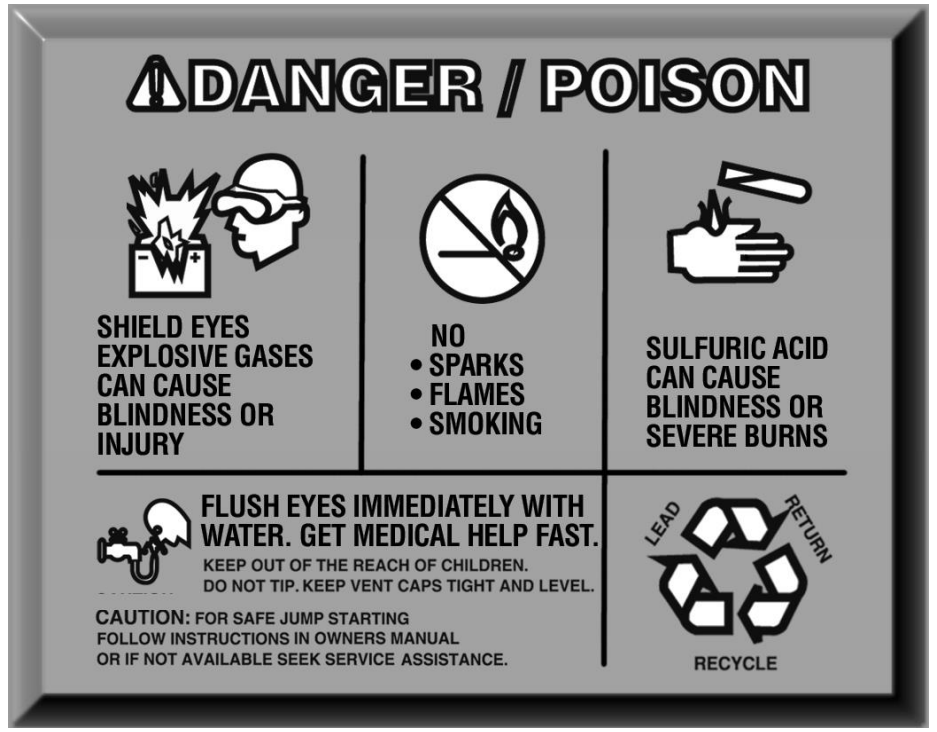
# *Taking Care of You Batteries*

- Safety First
- Battery Connections
  - Series Connections
  - Parallel Connections
  - Series / Parallel Connections
- Charging Your Batteries
- Proper Maintenance
  - Temperature Compensation
  - Torque Specifications
  - Cleaning
  - Addition of Water (distilled or deionized only)
- Tips
  - Cleaning
  - Storing your Batteries

# Safety First

## Do's and Don'ts

- Always wear protection for eyes and skin.
- No open flames or smoking around batteries
- Use insulated tools when making battery connections
- Electrolyte is a solution of acid and water, so avoid skin contact. If acid contacts skin or eyes, flush with water immediately and contact a medical professional.
- Ensure connectors are torqued to the proper specifications (see fig.1 illustration for proper specs.)
- Do not lay anything on top of the batteries (wires, cables, tools, etc.)
- Always charge and handle batteries in a well-ventilated area
- Only add distilled or deionized water to your batteries and fill to the appropriate level.
- Never add pre-mixed acid to your batteries




**5/16 Studs or Bolts**

**100-120 in. lbs. / 11.3-13.6 N-m**

**3/8" Studs or Bolts**

**120-180 in. lbs. (10-15 ft. pounds) / 13.6-20.3 N-m**

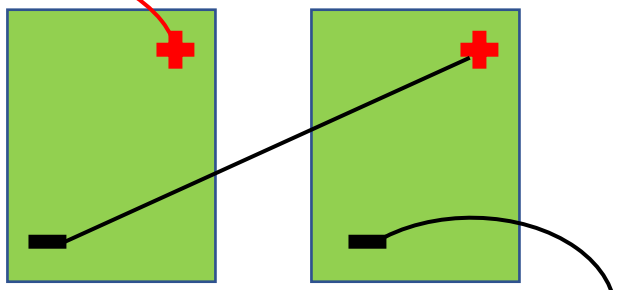
**fig.1**

# Battery Connections

*Series 6v & Parallel 12v*

**6v Series connection = 12v**

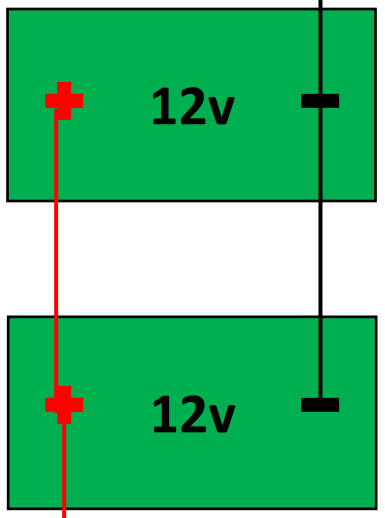
Positive side of charger



Negative side of charger

**12v Parallel connection = 12v**

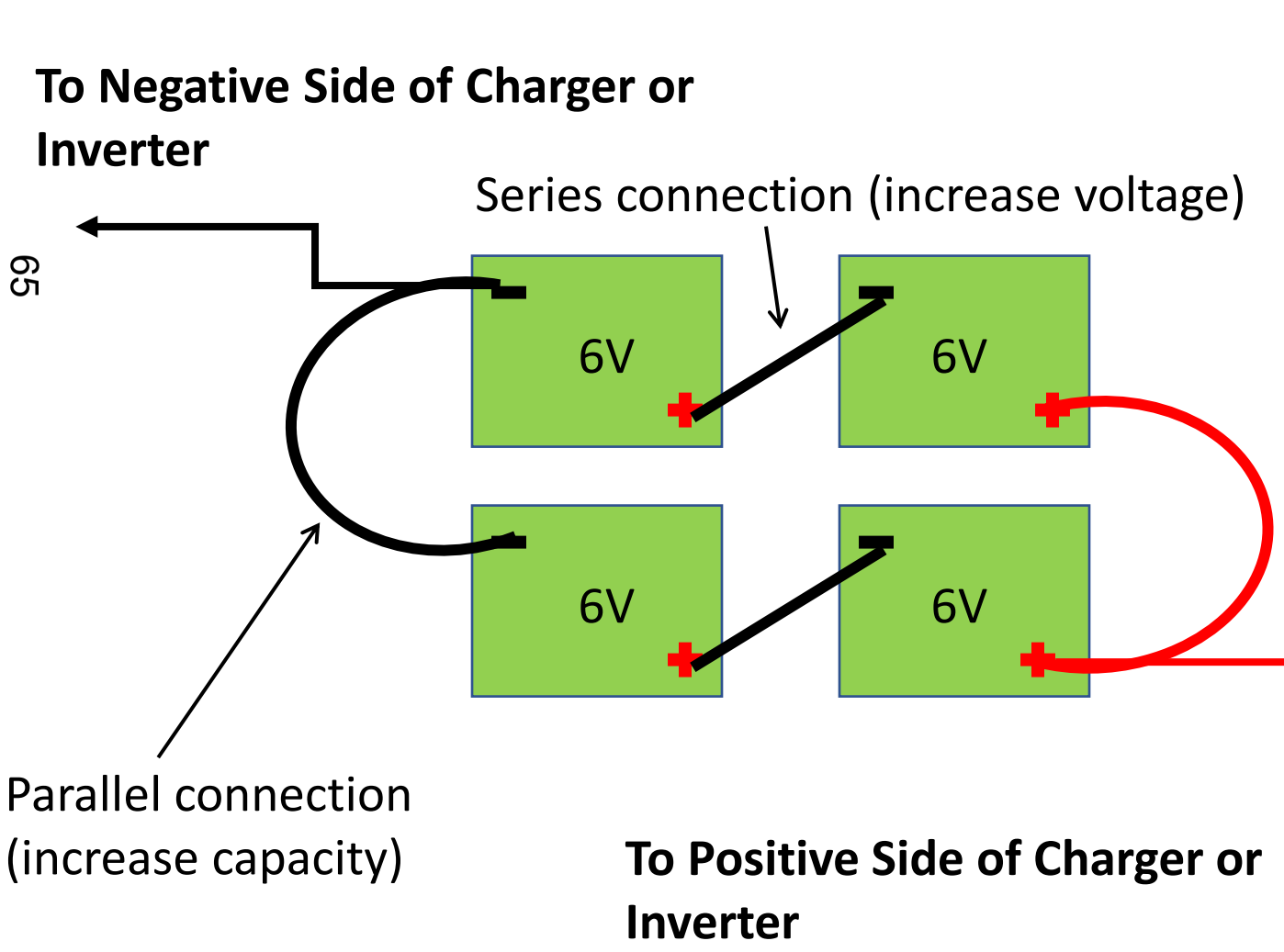
To Charger Ground
or to Inverter Ground

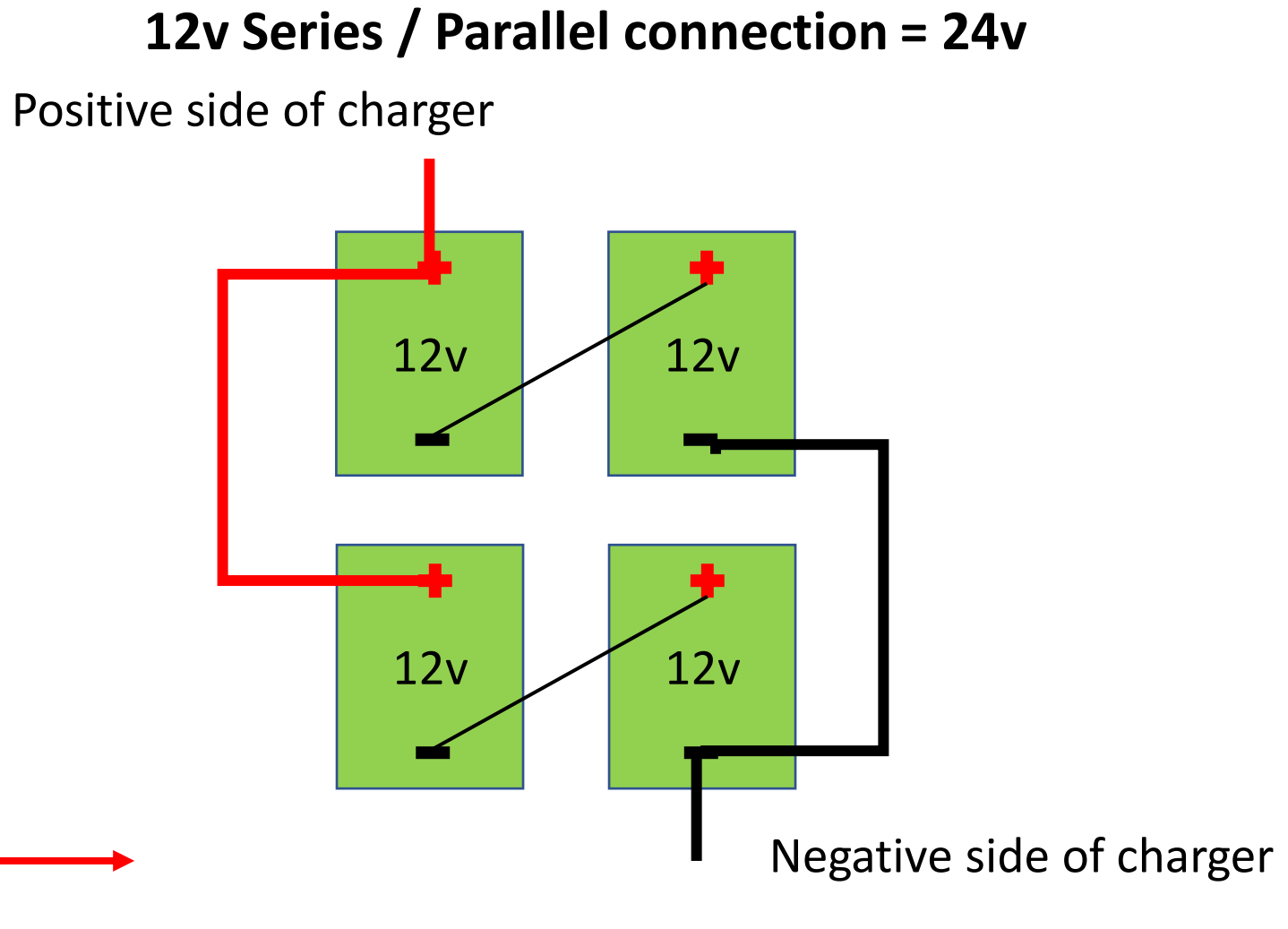



To Charger Positive
or to Inverter Positive

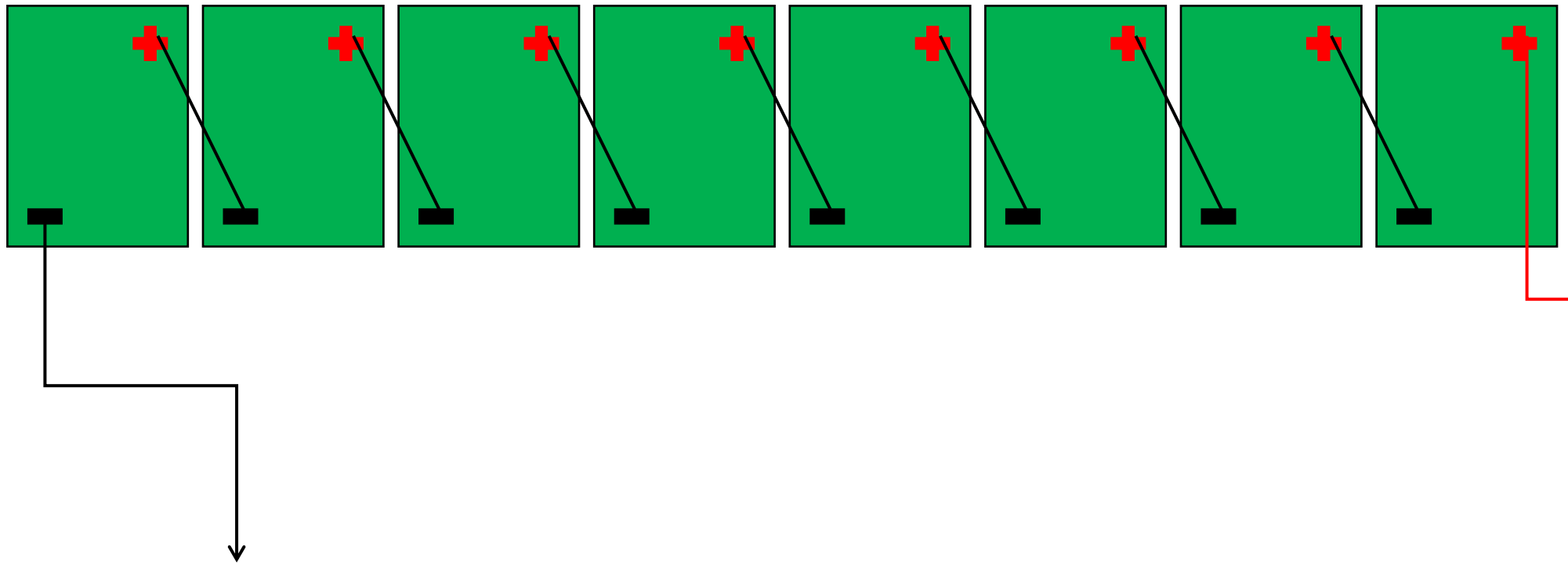
# Battery Connections

*Series / Parallel 6v & 12v*



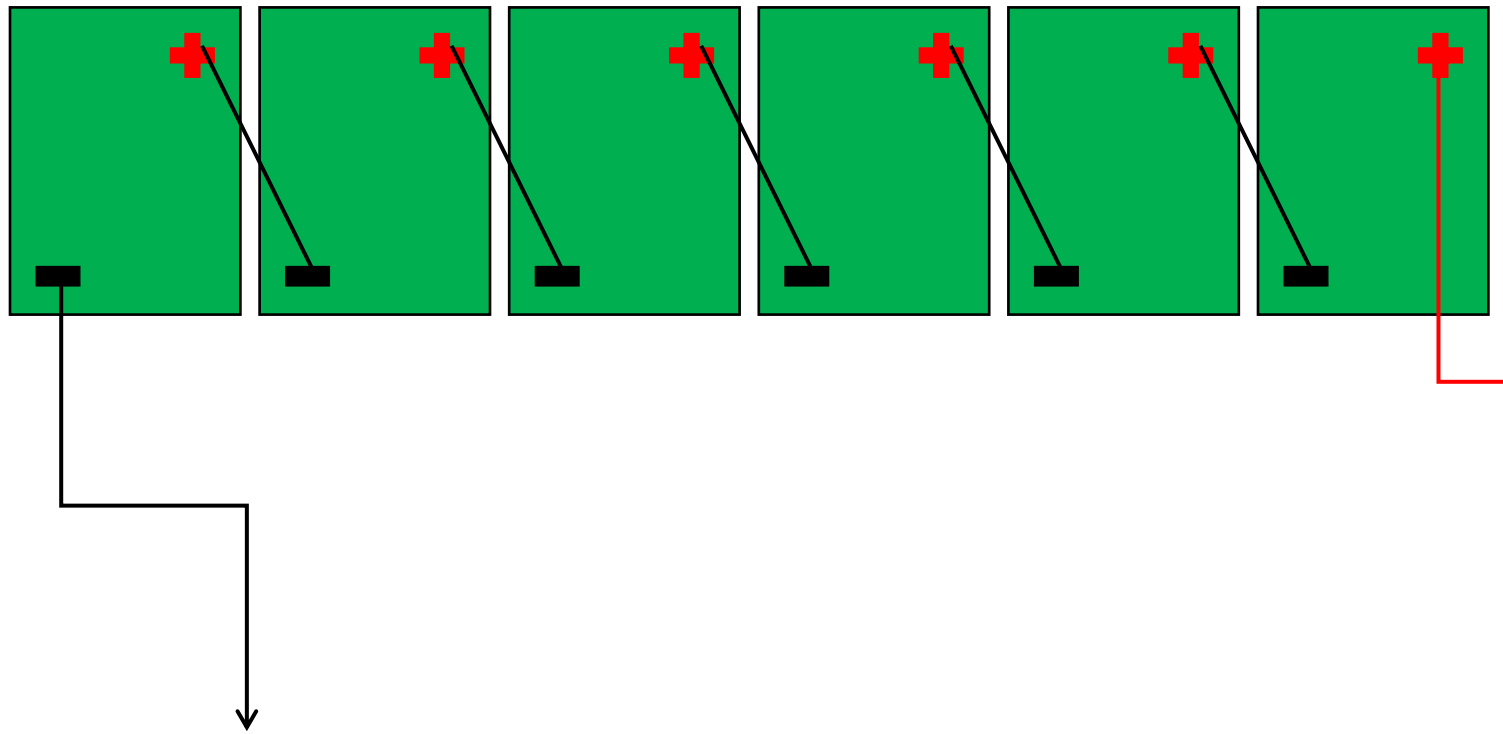
# 8 Battery Connection using 6V Batteries
# For 48v System
# Series Connection



To Negative side of charger

To Positive side of charger

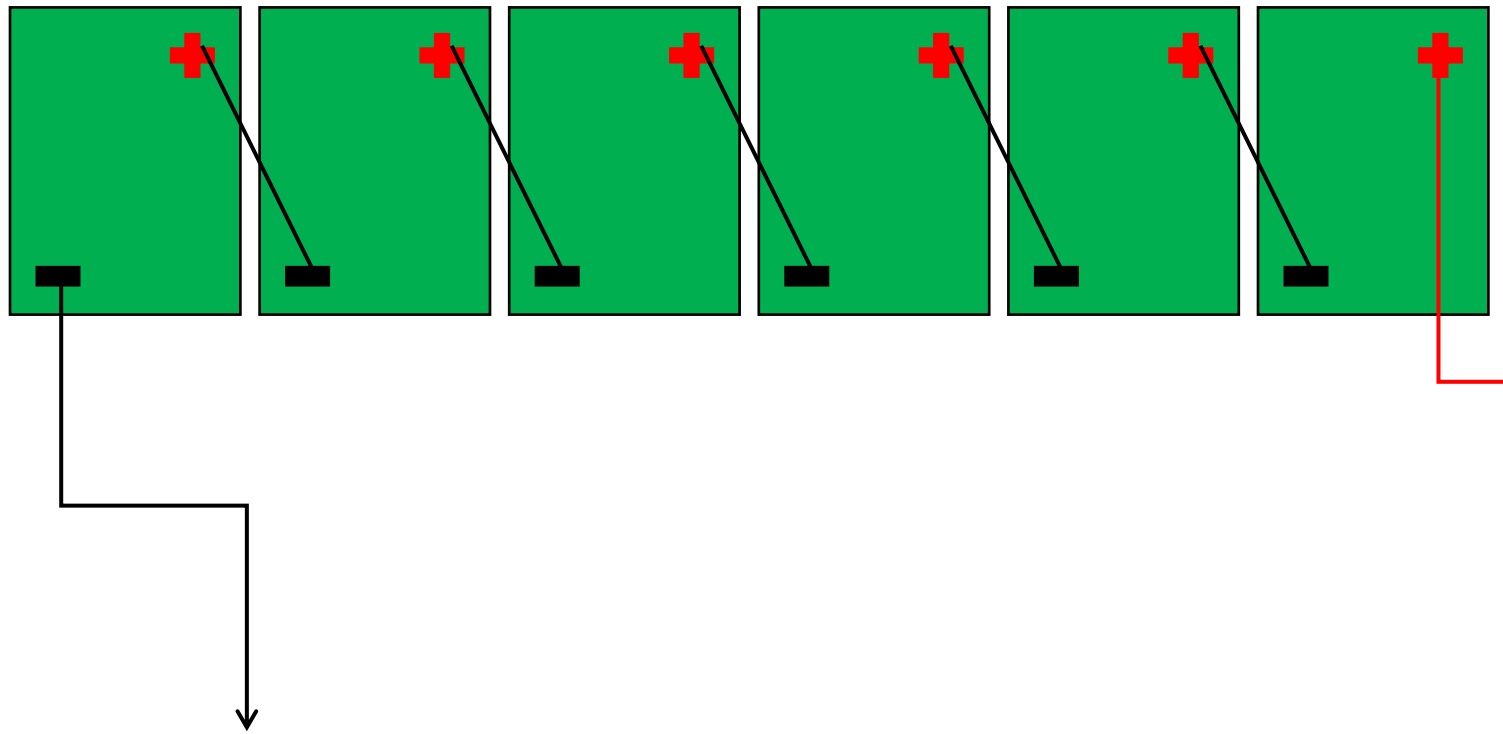
# 6 Battery Connection using 8V Batteries
# For 48v System
# Series Connection



To Negative side of charger

To Positive side of charger

# 6 Battery Connection using 6V Batteries
# For 36v System
# Series Connection



To Negative side of charger

To Positive side of charger

# Charging Parameters

| Charging State | Current(Amps) | Voltage Regulation | | | | |
|---|---|---|---|---|---|---|
| | | Volts per Cell | 6V | 12V | 24v | 48v |
| Bulk | 10% to 13% of 20hr Ah Rating | 2.47 | 7.40 | 14.80 | 29.60 | 59.30 |
| Absorption | Taper to 3% of 20 hr Ah Rating and hold for 2-3 hours | 2.47 | 7.40 | 14.80 | 29.60 | 59.30 |
| Float | | 2.25 | 6.75 | 13.5 | 27.00 | 54.00 |
| Equalization | Total time = 2 hrs. | 2.70 | 8.10 | 16.20 | 31.20 | 62.40 |



**Note:** Leave vent caps securely fastened while doing any charging.

# Torque Specifications & Temperature Compensations

1. Terminal Torque specification: 5/16" Stud = 95-105 inch-pounds (not foot-pounds)

2. Equalization should be done every 4-6 weeks or if specific gravities have a .010 to .015 difference between c

3. We recommend using the following: For every 1º F below 77º F add 0.0028 volts per cell or for every 1 C below 25º C add 0.005 volts per cell to the charger voltage setting.

4. A 12 volt battery @ 70º F. The recommended charging voltage at 77º F is 14.8 volts. The adjusted charging voltage is 14.8 + (6 cells * 7 degrees below * 0.0028) = 14.92 volts.

5. A 12 volt battery @ 21º C. The recommended charging voltage at 25º C is 14.8 volts. The adjusted charging voltage is 14.8 + (6 cells * 4 degrees below * 0.005) = 14.92 volts.

6. For every 1º F above 77º F subtract 0.0028 volts per cell or for every 1º C above 25º C subtract 0.005 volts per cell to the charger voltage setting.

7. A 12 volt battery @ 85º F. The recommended charger voltage at 77º F is 14.8 volts. The adjusted charging voltage is 14.8 – (6 cells * 8 degrees above * 0.0028) = 14.67 volts.

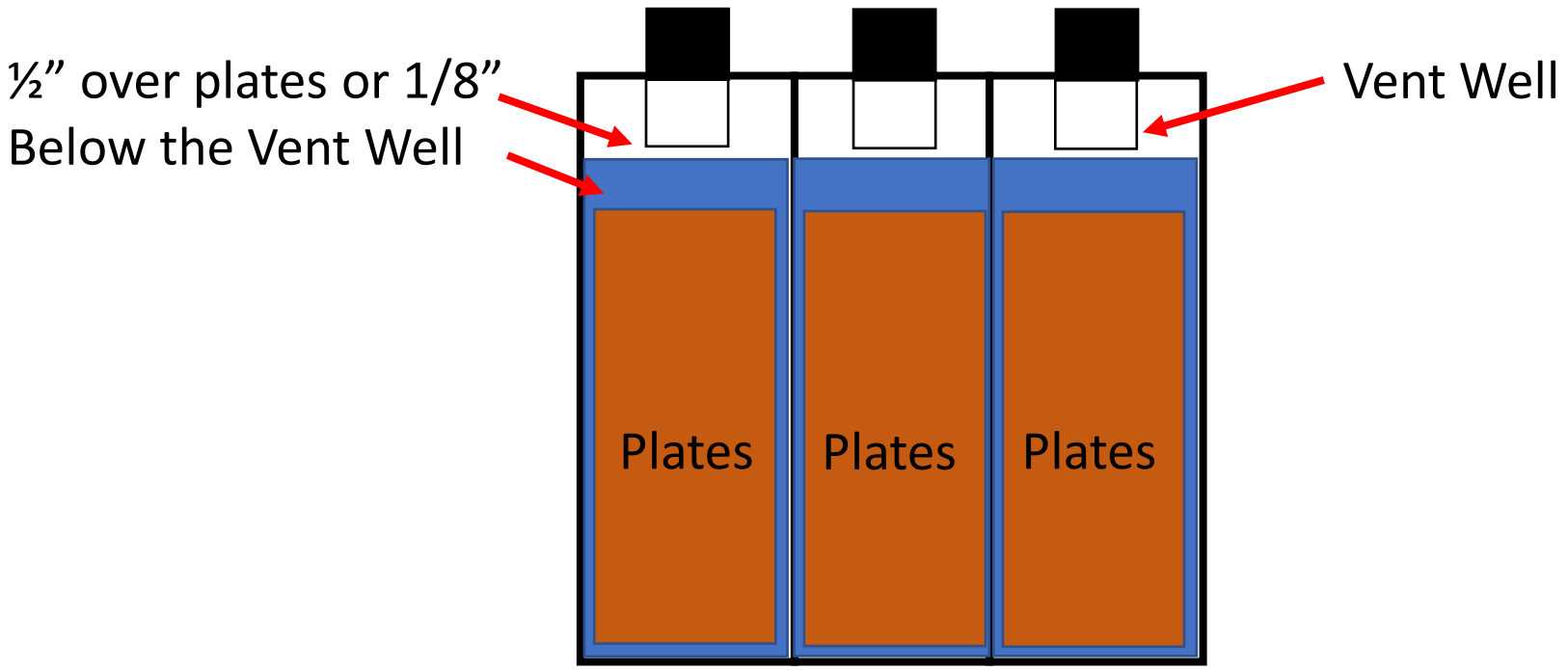
8. A 12 volt battery @ 29.5º C. The recommended charger voltage at 25º C is 14.8 volts. The adjusted charging voltage is 14.8 – (6 cells * 4.5 degrees above * 0.005) = 14.67 volts.

# OCV (Open Circuit Voltage) vs. SOC (State of Charge)

| FLOODED/WET STATE OF CHARGE AS A MEASURE OF SPECIFIC GRAVITY AND OPEN-CIRCUIT VOLTAGE | | | | | |
|---|---|---|---|---|---|
| STATE OF CHARGE (%) | SPECIFIC GRAVITY | CELL | 6 VOLT | 8 VOLT | 12 VOLT |
| 100 | 1.277+ | 2.122 | 6.37 | 8.49 | 12.73 |
| 90 | 1.258 | 2.103 | 6.31 | 8.41 | 12.62 |
| 80 | 1.238 | 2.083 | 6.25 | 8.33 | 12.50 |
| 70 | 1.217 | 2.062 | 6.19 | 8.25 | 12.37 |
| 60 | 1.195 | 2.04 | 6.12 | 8.16 | 12.24 |
| 50 | 1.172 | 2.017 | 6.05 | 8.07 | 12.10 |
| 40 | 1.148 | 1.993 | 5.98 | 7.97 | 11.96 |
| 30 | 1.124 | 1.969 | 5.91 | 7.88 | 11.81 |
| 20 | 1.098 | 1.943 | 5.83 | 7.77 | 11.66 |
| 10 | 1.073 | 1.918 | 5.75 | 7.67 | 11.51 |

# Addition of Water (distilled or deionized)

- Always charge the batteries before you add water.
- Only add water to discharged or partially discharged batteries before charging if the water levels are below the plates.
- Once fully charged continue with the watering procedure.
- When adding distilled or deionized water, fill to the appropriate level and never overfill.
- After adding water, secure vent caps back on batteries.



# Cleaning Your Batteries and Connectors

- Inspect battery for cleanliness at regular intervals and keep terminals and connectors free of corrosion.
- Prior to cleaning check that all vent caps are secured properly on the battery.
- Clean the top of the battery, terminals and connections with a cloth or brush and a sodium bicarbonate solution (1 cup of baking soda to 1 gallon of water (150g/1L)).
- Do not allow the cleaning solution to get inside the battery.
- Rinse with water and dry with a clean cloth.
- Keep the area around batteries clean and dry.
- After connections are clean and dry, reconnect the cables and/or hardware.
- Apply a spray protector or equivalent to the terminals for added protection from the elements

# Storing your Batteries

- Fully charge batteries before placing in storage.
- Store in a cool, dry location, protected from the elements.
- Batteries self-discharge during storage. Monitor the specific gravity or voltage every 4-6 weeks.
- In high temperatures (greater than 90°F or 32°C) monitor the specific gravity or voltage every 2-4 weeks as batteries will self-discharge faster.
- Stored batteries should be given a boost charge when they are at or less than 70% State of Charge (SOC).
- After storage, recharge before use.

# Installing Fully Assembled Kits For Commercial Applications

- **Prior to servicing any vehicle, please turn the key switch to the OFF position.**
- **Do not service any vehicle while charger cable is plugged into the vehicle or while it is moving.**
- **Do not use any metal tools or have anything metal on your body while working over the batteries.**
- **Wear proper safety protection such as safety glasses, face shield and rubber gloves when installing or working with batteries.**
- **If acid comes into contact with your skin or eyes, flush with water and call a physician immediately.**
- **Read instructions in entirety before beginning the installation**

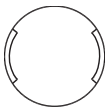
Remove vent caps

1. Lift golf car seat or access panel and remove existing vent caps that are on batteries. Check the electrolyte level to ensure the minimum level covers the top of the plates. If necessary, add just enough water to cover the plates.

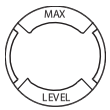
2. Remove the fully assembled system from its bag and lay it over the battery. The systems are configured to work with the specific batteries in your golf car or vehicle.

Fully Assembled Kit

3. Follow drawings shown for the specific layout needed, snapping the valves into each cell, going all the way across one row before starting on the next row. Make sure floats clear any obstruction in vent well.

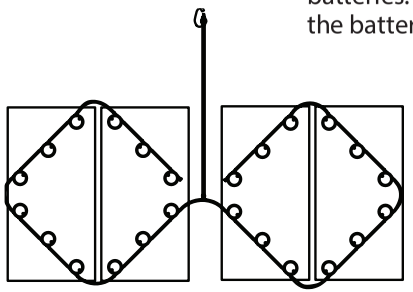


*This is a typical battery vent opening*

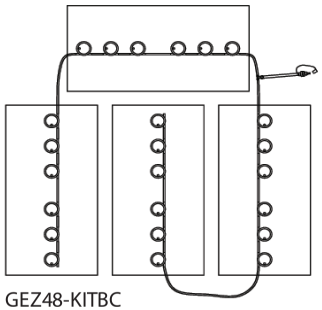



*This is a special battery vent opening*

4. Once the system is installed, fully charge the batteries. Immediately following full charge, water the batteries.



GYM-KITC29BC

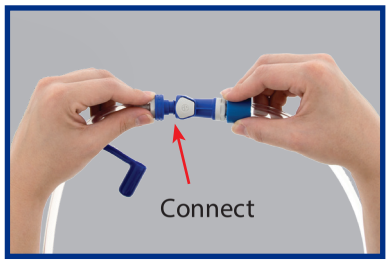


GEZ48-KITBC

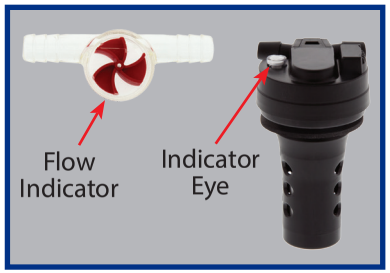


# Filling with a 2.5 Gallon (9.46 L) Gravity Feed Tank

1. Be sure batteries are fully charged. Place the gravity feed tank at least 3' (.91 m) above the top of the batteries. This will ensure sufficient water flow.




2. Connect the 2.5 gallon (9.46 L) gravity feed tank to the battery filling system by inserting the male connector from the kit into the female connector on the gravity feed tank. Using the gravity feed tank takes longer to fill than using the direct fill link.




3. When the flow indicator stops spinning, the indicator eyes come up on the valves giving a visual indication that the correct electrolyte level has been reached.


4. Push the release button on the female connector to disconnect.


5. After watering, re-attach the dust cap to keep dirt and debris from entering the watering system. Leave the dust cap on until the next watering.

## Filling with a Manual Pump

Connect the manual pump to the battery watering system by inserting the male connector from the kit into the female connecor on the pump. The tubing end is placed into a jug of distilled water. Squeeze the bulb on the manual pump to begin filling the battery cells with water. When the bulb becomes hard and the valve indicator eyes have risen, all of the cells are full. Disconnect the manual pump connector from the watering system and replace the dust cap.

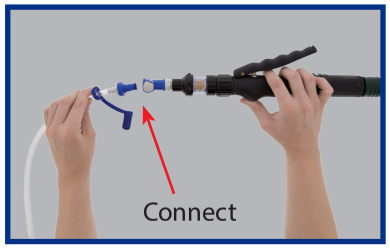
***ONLY WATER BATTERIES AFTER FULLY CHARGING!*** **The electrolyte levels inside the battery rise during the charging cycle and fall during the discharge cycle.**

**Adhere to the following operating requirements when using the direct fill link:** ***Inlet pressure range is 10-90 PSI. Air should be purged from the hose line before filling.*** **Simply run water through the hose before connecting the direct fill link to the hose end.**

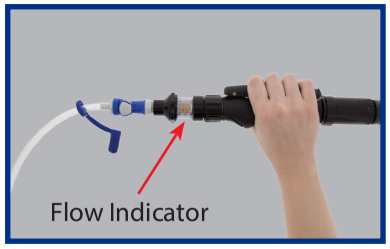
***Batteries need to be watered every 2-4 weeks*** **depending on battery usage, operating temperatures and the age of the batteries.** ***ALWAYS DISCONNECT FROM WATER SOURCE AFTER FILLING.***



## Filling with a Direct Fill Link




1. Be sure batteries are fully charged. Connect the direct fill link to the battery filling system by inserting the male connector from the kit into the female connector on the link.




2. Squeeze the handle to start the flow of water. The flow indicator will spin indicating that water is flowing through the valves into the cells.


3. When the flow indicator stops spinning, the indicator eyes come up on the valves giving a visual indication that the correct electrolyte level has been reached.


4. Push the release button on the female connector to disconnect.


5. After watering, re-attach the dust cap to keep dirt and debris from entering the watering system. Leave the dust cap on until the next watering.

**Interstate Batteries**
**501-258-5584**

# Manual Pump

- **Always wear personal protective equipment (goggles, gloves, etc.) to protect yourself from sulfuric acid.**
- **Only water after charging.**
- **Do not store hand pump in battery compartment**
- **Read instructions in entirety before beginning the installation.**

## Operation Instructions:

1. Fully charge the batteries. This must be done before water is added to the batteries to avoid electrolyte loss.

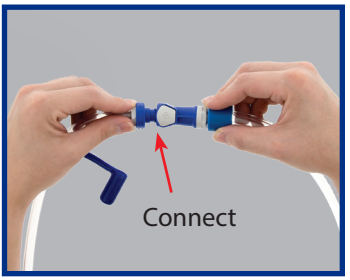
2. Insert the pump assembly end into a just of distilled water.

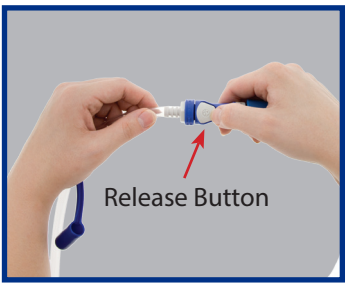
3. Remove the dust cap from the watering system fill tube. Connect it to the manual pump connector by inserting it into the quick connect.

4. Squeeze the bulb on the manual pump to begin filling the battery cells with water. When the bulb becomes hard and the valve indicator eyes have risen, all of the cells are full.

5. Disconnect the manual pump connector from the watering system and replace the dust cap.

***NEVER LEAVE THE WATERING SYSTEM CONNECTED TO THE MANUAL PUMP OR ANY OTHER FILLING DEVICE.***



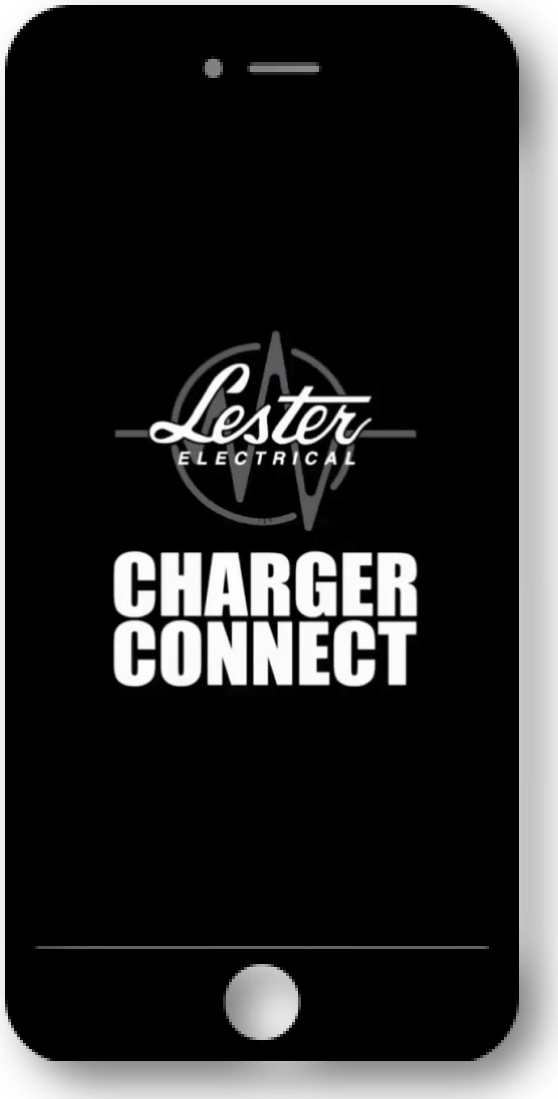




Interstate Batteries
501-258-5584

# Lester Electrical ChargerConnect™

# App Users Guide

*For use with Summit Series® II battery chargers*



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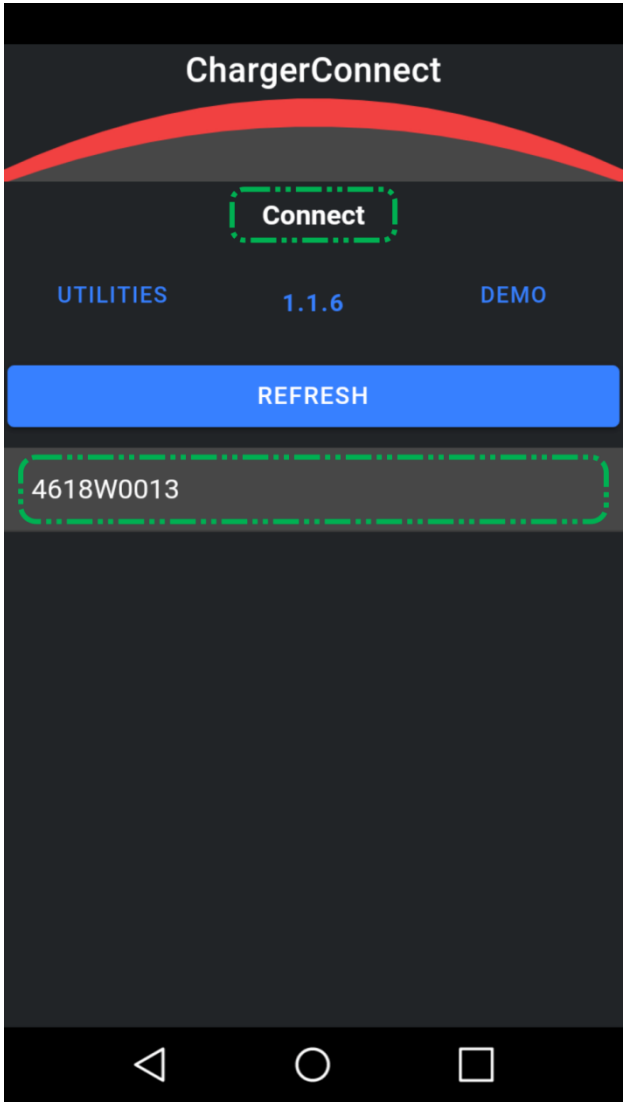
# Lester Electrical ChargerConnect™ App User's Guide

Lester Electrical Summit Series® II chargers features Bluetooth wireless communication, which can be accessed using an Apple® or Android™ smart phone, tablet, or similar device. Download the ChargerConnect app for your device by visiting the App Store® or the Google Play™ store and searching for "ChargerConnect".




The Summit Series II charger communication electronics are DC powered, so the charger must be connected to a valid battery pack in order to communicate with it via Bluetooth. The ChargerConnect application (app) requires both the Bluetooth and location services to be enabled on the mobile device for proper operation. Once the charger is connected to a valid battery pack, open the ChargerConnect app and select the charger's serial number from the list of available chargers listed. If the serial number of your charger is not listed, touch the "Refresh" bar to re-scan for available chargers. While connected, the Red, Yellow, and Green LEDs on the charger will slowly blink at the same time until the Bluetooth communication is disconnected from the charger. If the unit was actively charging before the Bluetooth connection was made, it will continue to charge while connected unless stopped via the app.

# Dashboard

**The Dashboard is the first screen that will appear when connection to the charger is established. This display provides an overview of programmable settings and charging status of your Summit Series® II charger.**

**Charger ID** – Displays the ID of the charger. This field is factory set to be blank. To customize the Charger ID, tap the open space in line with the start of the battery profile number and a cursor and keyboard will appear.

**Vehicle ID** – Displays the ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. To customize this setting, use the same procedure listed under the Charger ID section.

**Battery Profile** – Displays the profile number of the active battery profile. A description of this profile, including the compatible batteries, is available on the "Battery Profile" screen.

**System Profile -** Displays the profile number of the active system profile, the setup file used to configure the battery charger to the application.

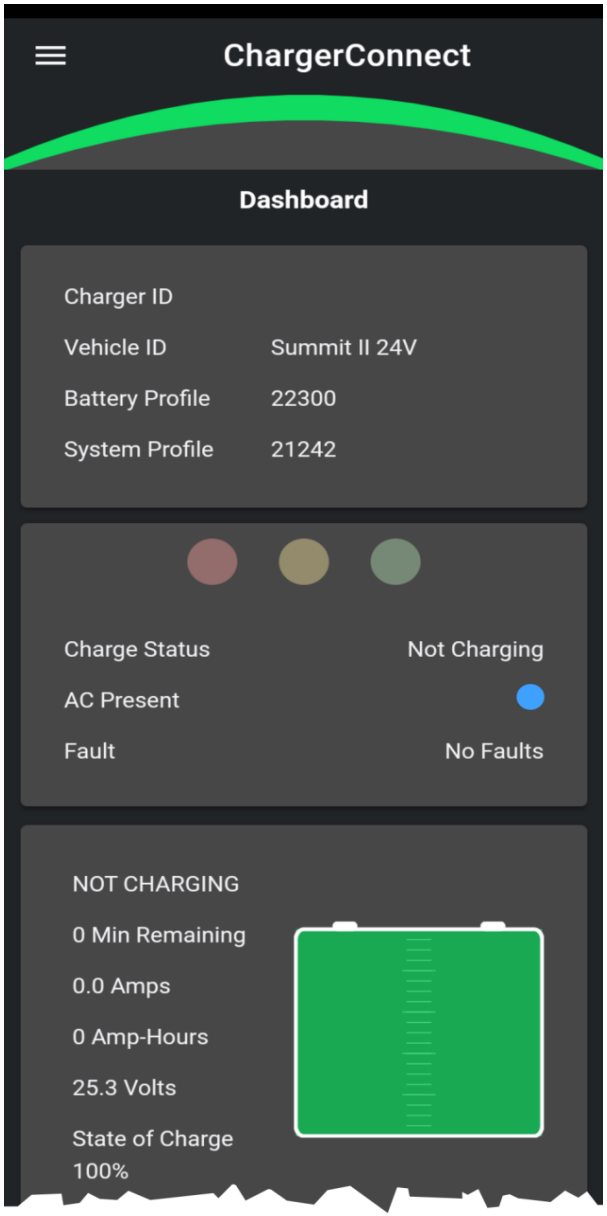
**LED Display** – Displays the same charge status LEDs that are present on the charger. Details regarding the LEDs can be found in the charger user's manual.

**Charge Status** – Displays the active charge cycle phase.

**AC Present** – Indicates AC input power is present at the charger by illuminating the field's blue LED, which corresponds to the blue "AC Present" LED on the charger.

**Fault** – Displays any active faults. Descriptions of the faults, as well as instructions for resolving them, are detailed in the charger user's manual.

***NOTE: Depending on the screen size of the smart phone or tablet (device) you are using, you may need to scroll down to see all of the fields.***



**Charge Time Remaining** – Displays the estimated charge time remaining in minutes.

**Output Current** – Displays the DC output current in amps.

**Amp-Hours Charged** – Displays the number of amp-hours charged.

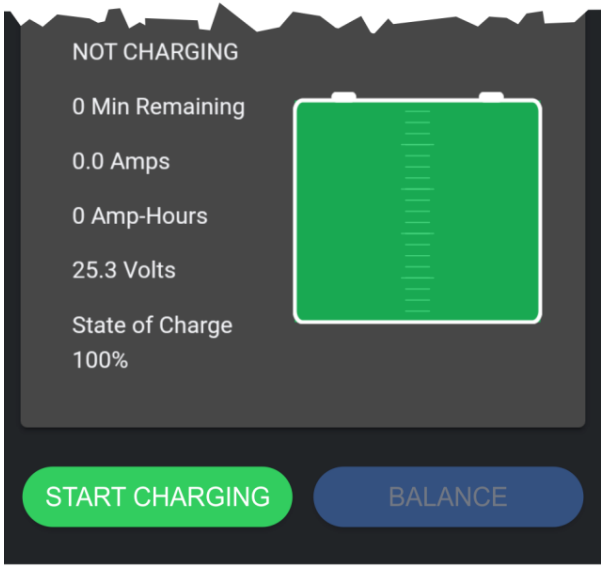
**Battery Voltage** – Displays the battery pack voltage in volts

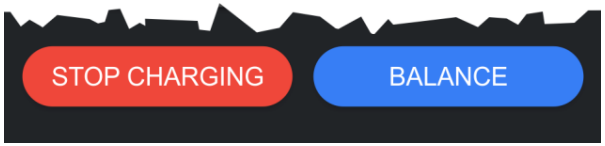
**Battery State of Charge** – Displays the estimated State of Charge (SOC) of the battery pack as a percentage and graphically.

**Auto Battery Voltage Detection (if enabled)** – When Auto Voltage Mode is active this field displays the status of the proprietary algorithm that selects the correct voltage settings for the charger. *See the "Auto Voltage Mode" section for details regarding Auto Voltage Mode.*

**Detected Battery Pack Voltage (if enabled)** – When Auto Voltage Mode is active, this field displays the detected battery pack voltage once the proprietary algorithm mentioned in the Auto Battery Voltage Detection reaches 100% completion.

**Manual Stop/Start Button** – Tapping this button will stop a charge cycle (red button) or start a charge cycle (green button).




**Manual Equalize/Balance Button** – If the active battery profile includes an Equalize or Balance phase, this button will be active, otherwise it will be grayed out. The Equalize and Balance phases of battery profiles are typically triggered based on a variety of events (a certain number of charge cycles occurring, etc). This button provides a method to manually trigger an Equalize or Balance to occur if instructed to do so by your battery manufacturer, distributor, or dealer. This button will also be grayed out if the active charge cycle already has an Equalize or Balance phase triggered.

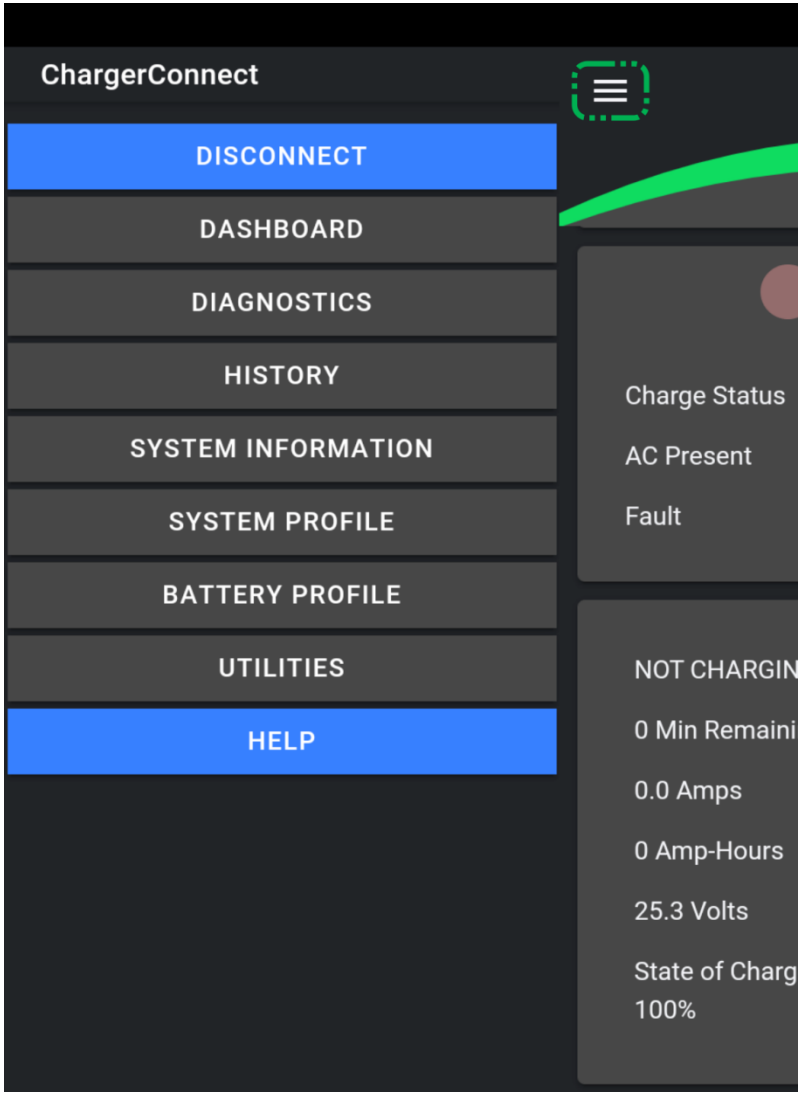
## Navigation Menu

**The Navigation menu allows access to the various programming sections within the ChargerConnect app.**

The Navigation Menu can be accessed by tapping the three (3) horizontal lines (Hamburger) in the upper left-hand corner of the app.

**Disconnect** – This menu item disconnects the Bluetooth connection between the charger and your smart phone or tablet (device) and returns you to the "Connect" screen.

***Note: If the connected charger is actively charging, the "History", "System Profile", "Battery Profile", and "Utilities" menu items will be disabled. The "Manual Stop/Start Button" on the "Dashboard" screen can be used to (1) stop the active charge cycle in order to access these menu items and (2) start a new charge cycle prior to disconnecting from the charger.***



## Diagnostics

**The Diagnostics tab displays summarized data of the chargers current status.**

**Amp meter** – Displays the DC output current in amps and graphically.

**Voltmeter** – Displays the battery pack voltage in volts and graphically.

**State of Charge (SOC)** – Displays the estimated State of Charge (SOC) of the battery pack as a percentage.

**Min Remaining** – Displays the estimated charge time remaining in minutes.

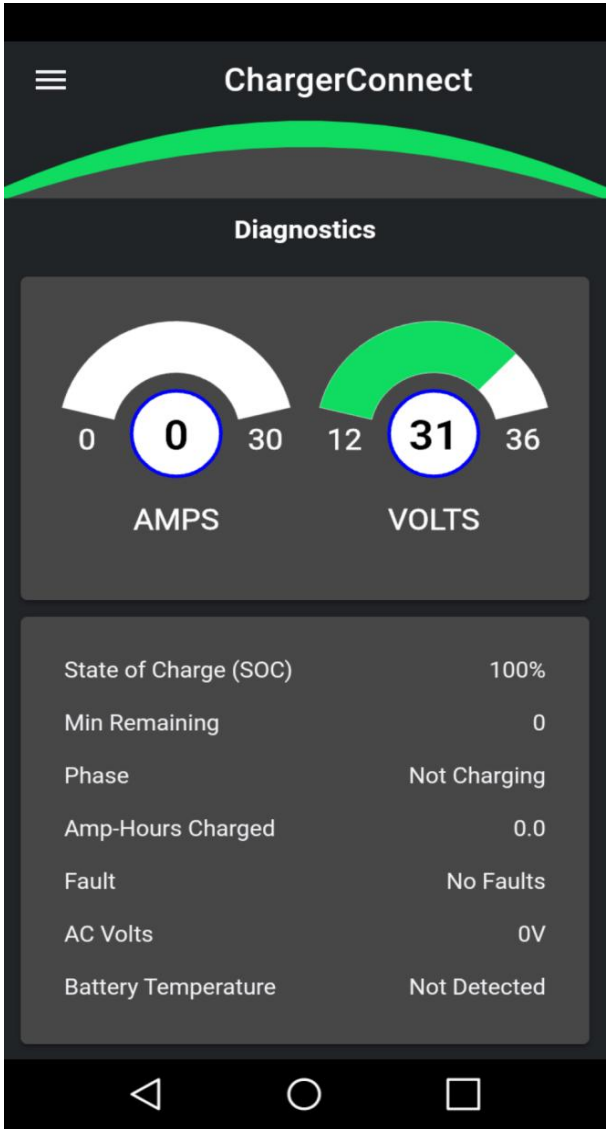
**Phase** – Displays the active charge cycle phase.

**Amp-Hours Charged** – Displays the number of amp-hours charged.

**Fault** – Displays any active faults. Descriptions of the faults, as well as instructions for resolving them, are detailed in the charger user's manual.

**AC Volts** – Displays the AC input voltage in volts.

**Battery Temperature** – Displays the battery temperature in °C if a battery temperature sensor is connected to the charger. If a battery temperature sensor is not connected to the charger, "Not Detected" is displayed in this field.

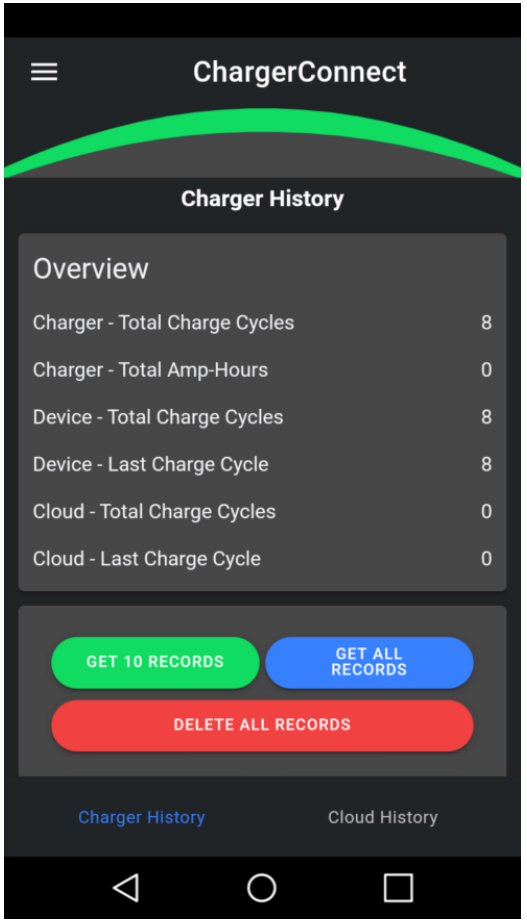


# History

**The Summit II Charger stores up to 255 historical charge records that can be used to diagnose issues that may occur during normal product usage. Valuable information such as termination records and charger run times are available in this app feature.**

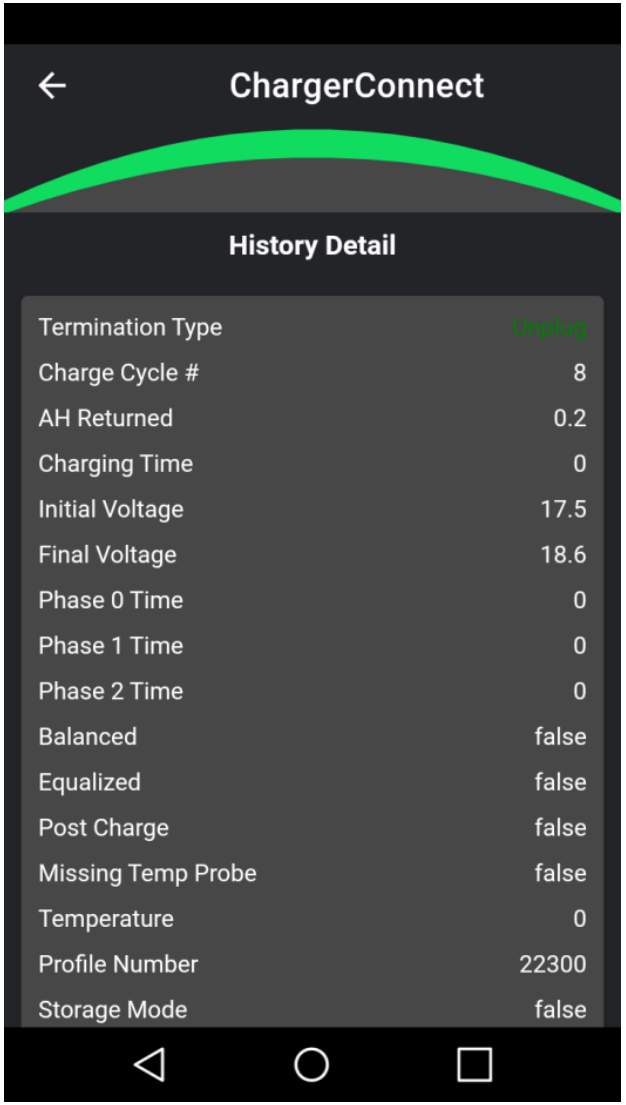
**Charger Histories Tab**

- **Overview Section**
  - **Charger**
    - **Total Charge Cycles** – Total charge cycles that the connected charger has recorded.
    - **Total Amp-Hours** – Total amp-hours that the connected charger has recorded.
  - **Device**
    - **Total Charge Cycles** – Total charge cycle history records that have been downloaded from the connected charger to your smart phone or tablet (device).
    - **Last Charge Cycle** – Number of the last charge cycle history record that has been downloaded from the connected charger to your smart phone or tablet (device).
  - **Cloud**
    - **Total Charge Cycles** – Total charge cycle history records that have been downloaded from the connected charger and uploaded to the ChargerConnect Cloud.
    - **Last Charge Cycle** – Number of the last charge cycle history record that has been downloaded from the connected charger and uploaded to the ChargerConnect Cloud.
- **Get 10 Records Button** – Tap to download the latest 10 charge cycle history records that have not been previously downloaded from the connected charger to your smart phone or tablet (device).
- **Get All Records Button** – Tap to download all charge cycle history records that have not been previously downloaded from the connected charger to your smart phone or tablet (device).
- **Delete All Records Button** – Tap to delete all charge cycle history records from your smart phone or tablet (device) that have been previously downloaded from the connected charger.
- **Records Section** – Individual charge cycle history records that have been downloaded from the connected charger are displayed in this section and can be selected to view the data (see “History Details” below).



## History Details

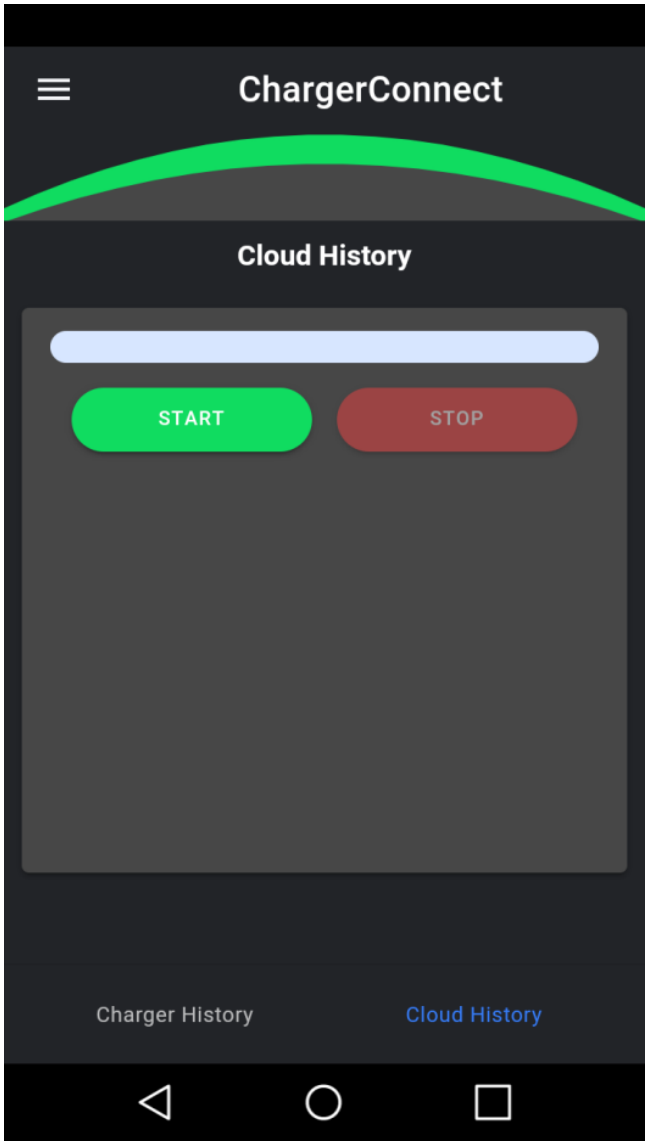
After tapping either the “GET 10 RECORDS” or “GET ALL RECORDS” the data from the charger will be displayed in a new section below the selection buttons. Press the blue arrow key to view the “History Details” screen. This area displays the data for an individual charge cycle history record. When you have finished reviewing the data, you can use the “Back” button (found at top left of history screen) in order to return to the “Charger Histories” tab.



## Cloud Histories Tab

To “push” the charge history records to a cloud server for off-line viewing, select the “Cloud History” selection in the bottom right hand corner of the “Charger History” screen. Tapping the “Start” button will upload all of the charge cycle history records that have been downloaded from the connected charger to your smart phone or tablet (device) to the ChargerConnect Cloud. Once the records have been uploaded, they can be accessed from any smart phone, tablet, laptop, or PC via ChargerConnect.net using the charger serial number.

*ChargerConnect.net will require a user account to be setup to view the registered information. Data uploaded and registered to the cloud server can be exported to Microsoft Excel or Microsoft Notepad for offline viewing.



## System Information

**The "System Information" screen is for the display of information only. No fields on this screen can be edited.**

**Serial Number** – Displays the serial number of the connected charger.

**Model Number** – Displays the model number of the connected charger.

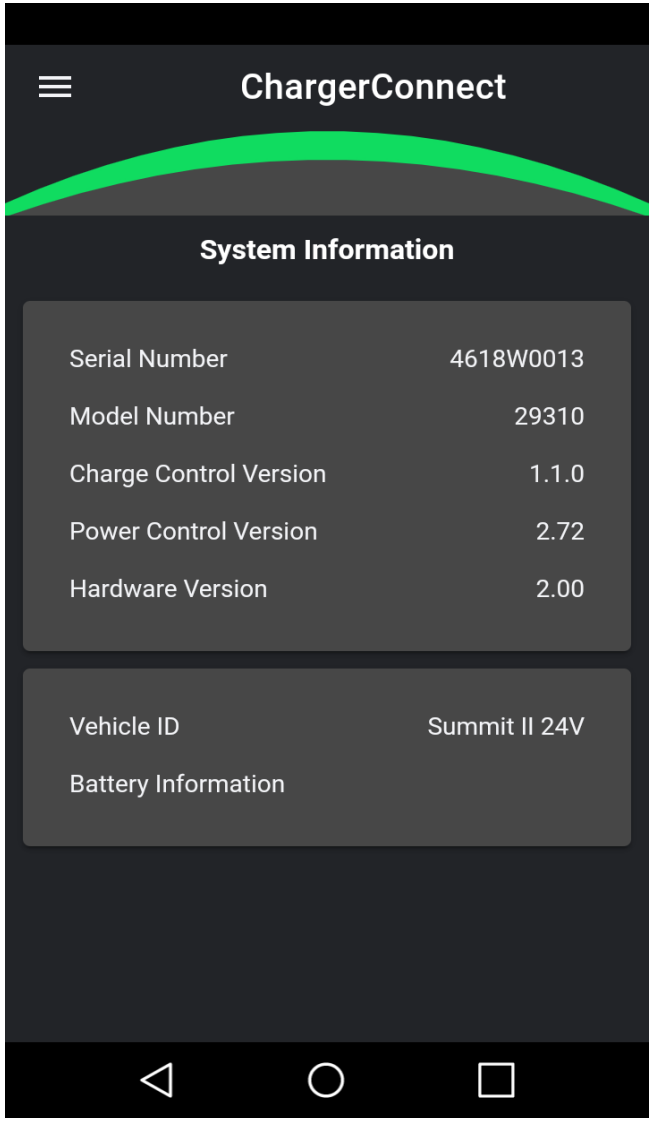
**Charge Control Version** – Displays the version of charge control firmware on the connected charger.

**Power Control Version** – Displays the version of power control firmware on the connected charger.

**Hardware Version** – Displays the hardware version of the connected charger.

**Vehicle ID** – Displays the ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. The Vehicle ID can be set/modified on the "Dashboard" and "System Profile" screens.

**Battery Information** – For future use. Not currently active.



## Charger System Profile (*See app screenshots below)*

The system profile selection identifies the settings of the charger that affect the operation. Pre-established system profiles can be changed to support functions such as onboard or shelf applications, as well as single volt and multi-volt operation.

**Charger ID** – The ID of the charger. This field is factory set to be blank. The Charger ID can be set/modified on the "System Profile" and "Dashboard" screens.

**Vehicle ID** – The ID of the vehicle that is paired with the charger (if applicable). The Vehicle ID is factory set to be blank. The Vehicle ID can be set/modified on the "System Profile" and "Dashboard" screens.

**System Profile** - Displays the profile number of the active system profile, the setup file used to configure the battery charger to the application.

**Cable Gauge (AWG)** – The gauge of the DC cable in American Wire Gauge (AWG). This field is used to correctly compensate for the voltage drop of the DC cable.

**Cable Length (feet)** – The length of the DC cable in feet [one direction only, not the sum of the length of both the positive (+) and negative (-) wires]. This field is used to correctly compensate for the voltage drop of the DC cable.



**On Board check box** – Checked  for On-Board and unchecked  for Off-Board.

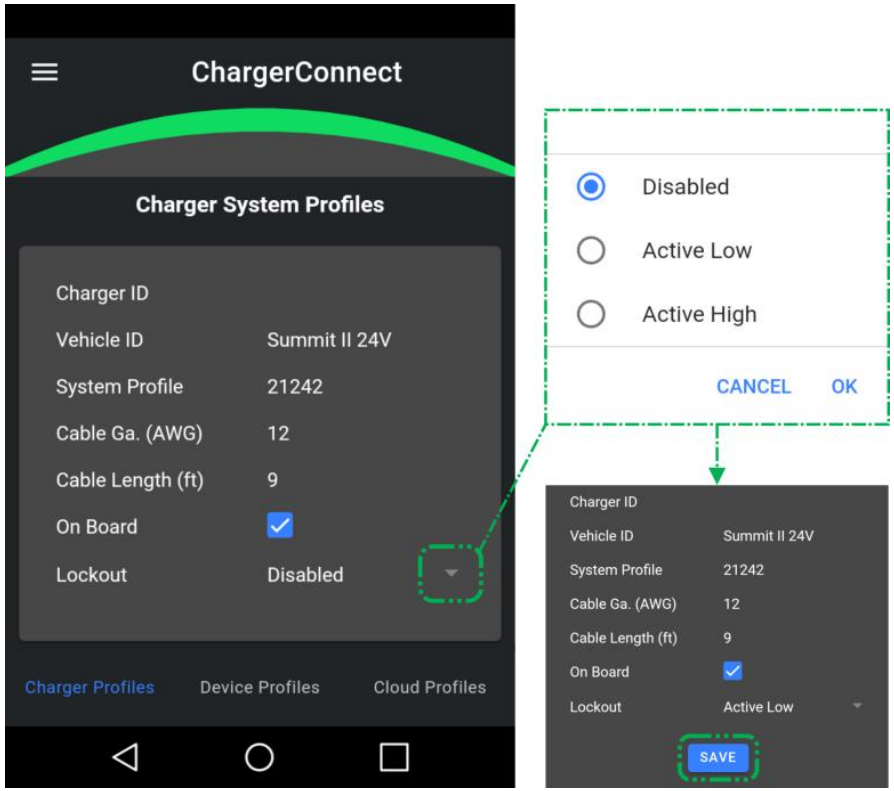
On-Board chargers are designed to be mounted on electric vehicles/equipment. While the DC output is connected to a battery pack of the proper voltage, a charge cycle automatically starts when the AC input plug is connected to AC power (unless a safety period of time has not passed since the successful completion of the previous charge cycle). Disconnecting the DC output from the battery pack IS NOT REQUIRED to automatically start a new charge cycle.

Off-Board chargers are designed to be used in shelf or portable applications. While the AC input plug is connected to live AC power, a new charge cycle automatically starts when the DC output is connected to a battery pack of the proper voltage. Disconnecting and reconnecting AC power while the DC output remains connected to a battery pack WILL NOT automatically start a new charge cycle. Disconnecting the DC output from the battery pack IS REQUIRED to automatically start a new charge cycle.

***NOTE: A charger configured as On-Board can be used in a shelf or portable application where the DC output connector/plug is connected and disconnected from the vehicle, but a charger configured as Off-Board should not be used in an application where it is mounted on a vehicle with the DC output permanently connected to the battery pack because the charger will not automatically start a new charge cycle when AC power is applied to the charger.***

**Lockout** – Vehicles with 3 or 4 wire DC connect cables may have a lockout option. This setting allow the user to custom configure the status of the lockout signal that is used to enable/disable the vehicle during charging operations.

- *Disabled – for use with EZGO 3 Pin connectors only*
- *Active Low – only active in 1050W and 1425W V2 Chargers*
- *Active High – only active in 1050W and 1425W V2 Chargers*




**Auto Voltage Profile Mode (*See app screenshots on following page)***
**Select Summit Series II charger models support automatic multi-voltage DC charging, referred to as Auto Voltage Mode.**

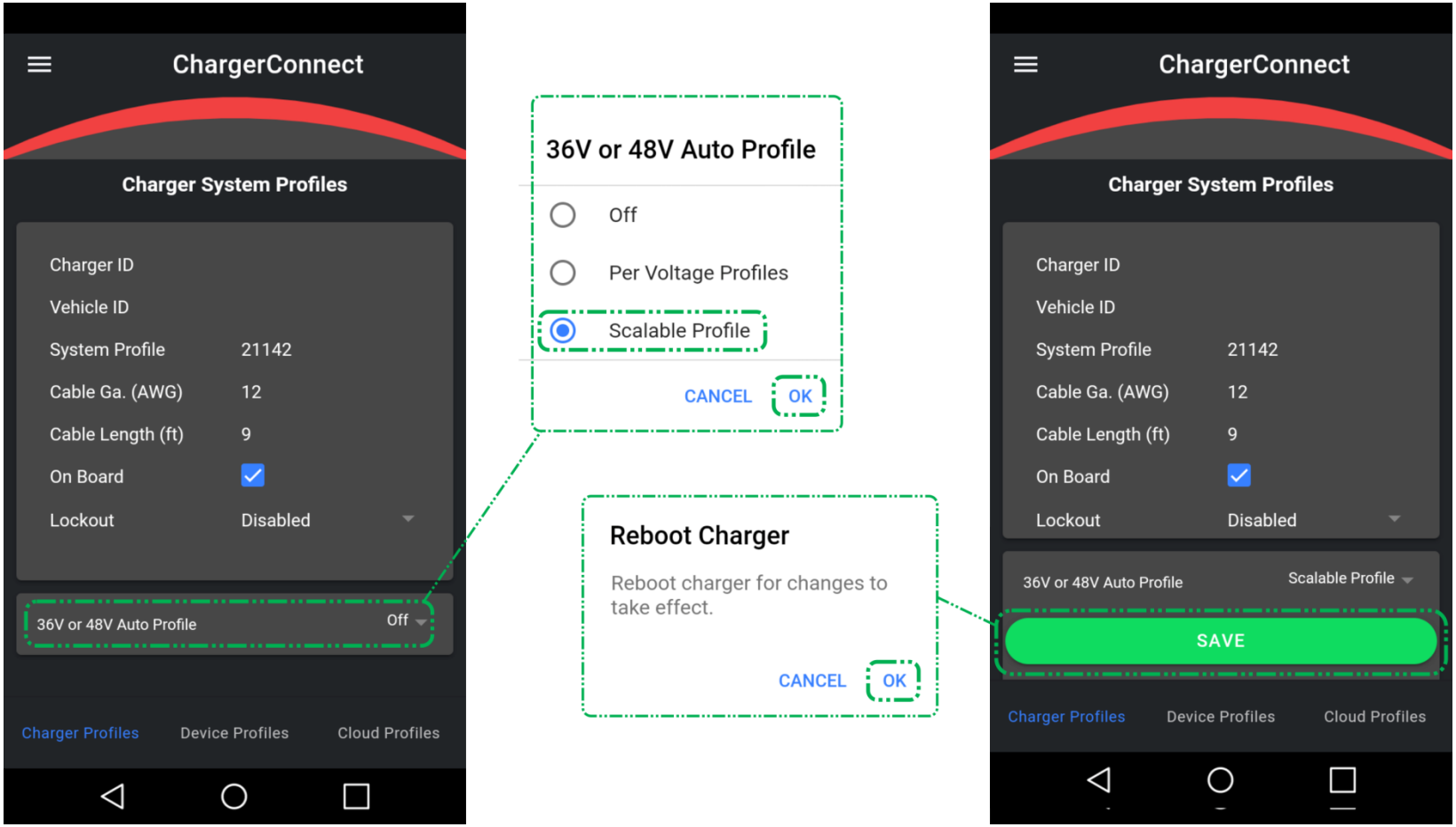
Auto Voltage Mode provides automatic DC output voltage detection and adjustment so that battery packs of nominal 48V and 36V (650W 48V, 36V, and 48-36V models) or nominal 48V, 36V, and 24V (all 1050W models) can be charged with a single charger without any configuration changes needing to be made to the charger when switching between battery packs of different nominal voltages. **Auto Voltage Mode will not detect 42V battery systems. (This change requires manual programming)**

When the connected charger model supports Auto Voltage Mode, the "System Profile" screen will include an "Auto Profile" selection box, which provides the following three (3) options:

- **OFF**: Single voltage mode – you MUST ensure that the nominal DC voltage of the "Active Battery Profile" for the charger matches the nominal DC voltage of the connected battery pack.
- **PER VOLTAGE PROFILES**:
  - **650W 48V, 36V, and 48-36V models**: A battery profile can be assigned for 48V and a different battery profile can be assigned for 36V. The proper battery profile is automatically selected based on the connected battery pack. This mode is primarily used when the charger will be charging 48V and 36V nominal battery packs where the battery packs are of different types and/or capacities so using the "Scalable Profile" mode is not appropriate. All voltage must be assigned a battery profile for this mode to be used.
  - **All 1050W models**: A battery profile can be assigned for 48V, a different battery profile can be assigned for 36V, and yet a different battery profile can be assigned for 24V. The proper battery profile is automatically selected based on the connected battery pack. This mode is primarily used when the charger will be charging 48V, 36V, and 24V nominal battery packs [or any combination of two (2) of these voltages] where the battery packs are of different types and/or capacities so using the "Scalable Profile" mode is not appropriate. All voltage must be assigned a battery profile for this mode to be used.
- **SCALABLE PROFILE**:
  - **650W 48V, 36V, and 48-36V models**: the nominal DC voltage of the "Active Battery Profile" is automatically scaled to 48V or 36V based on the connected battery pack.
  - **All 1050W models**: the nominal DC voltage of the "Active Battery Profile" is automatically scaled to 48V, 36V, or 24V based on the connected battery pack.

***NOTE: If the charger is currently set to "Per Voltage Profiles" or "Scalable Profile" mode, and you set the "Auto Profile" selection box to "Off", you MUST ensure that the nominal DC voltage of the "Active Battery Profile" for the charger matches the nominal DC voltage of the connected battery pack via the "Battery Profiles" screen.***

When Auto Voltage Mode is active (either "Per Voltage Profiles" or "Scalable Profile") the "Dashboard" screen provides the status of the proprietary algorithm that executes at the beginning of the charge cycle by displaying the "Auto Battery Voltage Detection" as a status percentage and the "Detected Battery Pack Voltage" (see the "Dashboard" section).

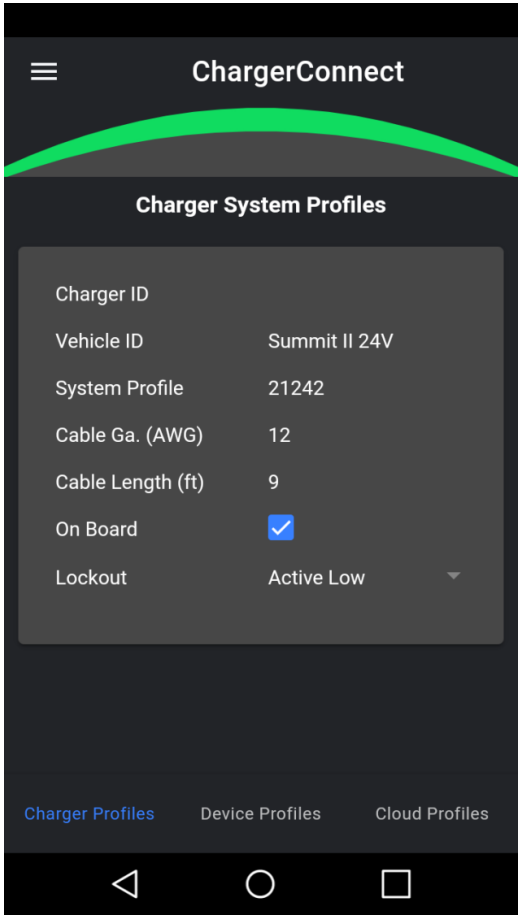

ChargerConnect
Charger System Profiles
Charger ID
Vehicle ID
System Profile 21142
Cable Ga. (AWG) 12
Cable Length (ft) 9
On Board
Lockout Disabled
36V or 48V Auto Profile Off
Charger Profiles
Device Profiles
Cloud Profiles
36V or 48V Auto Profile
Off
Per Voltage Profiles
Scalable Profile
CANCEL
OK
Reboot Charger
Reboot charger for changes to take effect.
CANCEL
OK
ChargerConnect
Charger System Profiles
Charger ID
Vehicle ID
System Profile 21142
Cable Ga. (AWG) 12
Cable Length (ft) 9
On Board
Lockout Disabled
36V or 48V Auto Profile Scalable Profile
SAVE
Charger Profiles
Device Profiles
Cloud Profiles

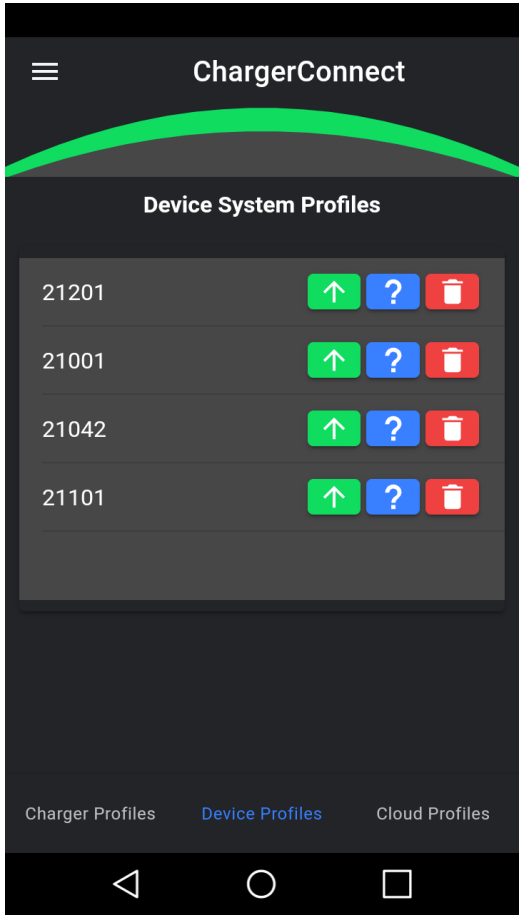
**Device Profiles Tab**

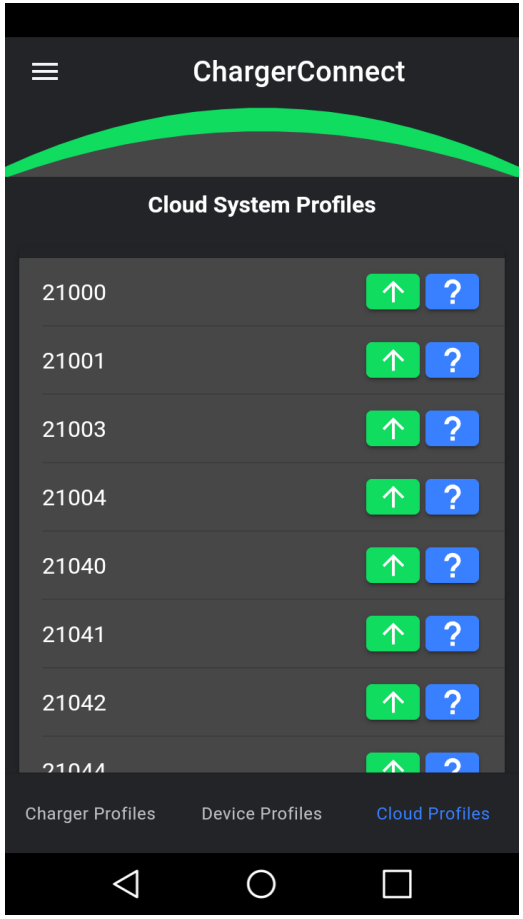
- Lists all system profiles available on your smart phone or tablet (device).
- Upload a system profile that resides on your smart phone or tablet (device) to the connected charger via the green arrow button. 
- Blue question mark buttons provide detailed descriptions of the system profiles. 
- Delete system profiles that reside on your smart phone or tablet (device) via the red trash can button. 

**Cloud Profiles Tab**

- Lists all system profiles available for download from the ChargerConnect Cloud.
- Download system profiles from the Cloud to your smart phone or tablet (device) via the green arrow buttons. 
- Blue question mark buttons provide detailed descriptions of the system profiles. 


ChargerConnect
Charger System Profiles
Charger ID
Vehicle ID
Summit II 24V
System Profile
21242
Cable Ga. (AWG)
12
Cable Length (ft)
9
On Board
Lockout
Active Low
Charger Profiles
Device Profiles
Cloud Profiles


ChargerConnect
Device System Profiles
21201
21001
21042
21101
Charger Profiles
Device Profiles
Cloud Profiles


ChargerConnect
Cloud System Profiles
21000
21001
21003
21004
21040
21041
21042
Charger Profiles
Device Profiles
Cloud Profiles

## Battery Profile *(See app screenshots below)*

**Battery Profiles are the unique battery charging algorithms that are require to fully charge various chemistries of deep cycle batteries**

**Charger Profiles Tab (10 pre-loaded profiles – can store up to 16)**

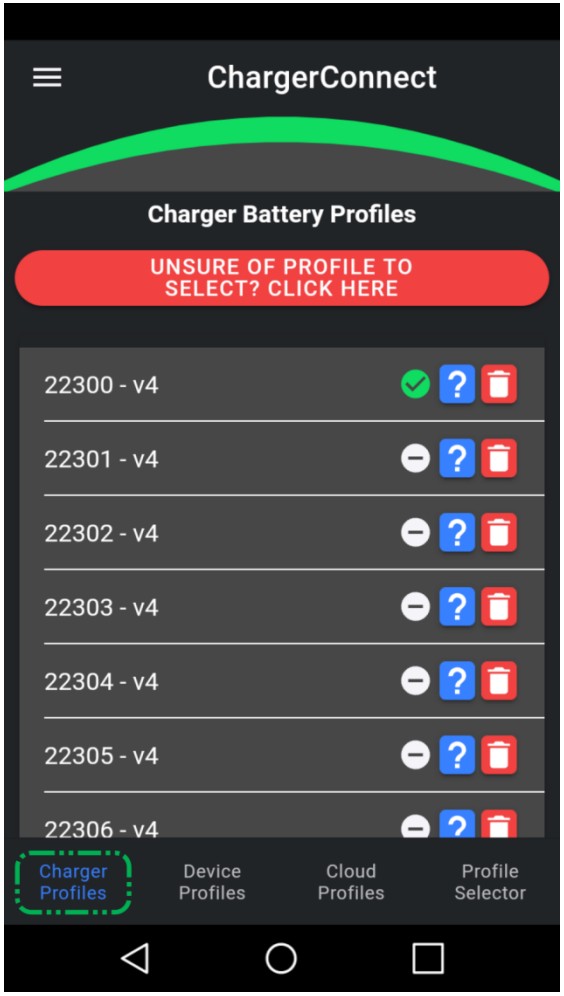
- Lists all battery profiles available on the connected charger.
- Set the "Active Battery Profile" via the green check mark. 
- Blue question mark buttons provide detailed descriptions of the battery profiles. 
  - See the "Battery Profile Quick Reference" section below for information regarding the most commonly used battery profiles.

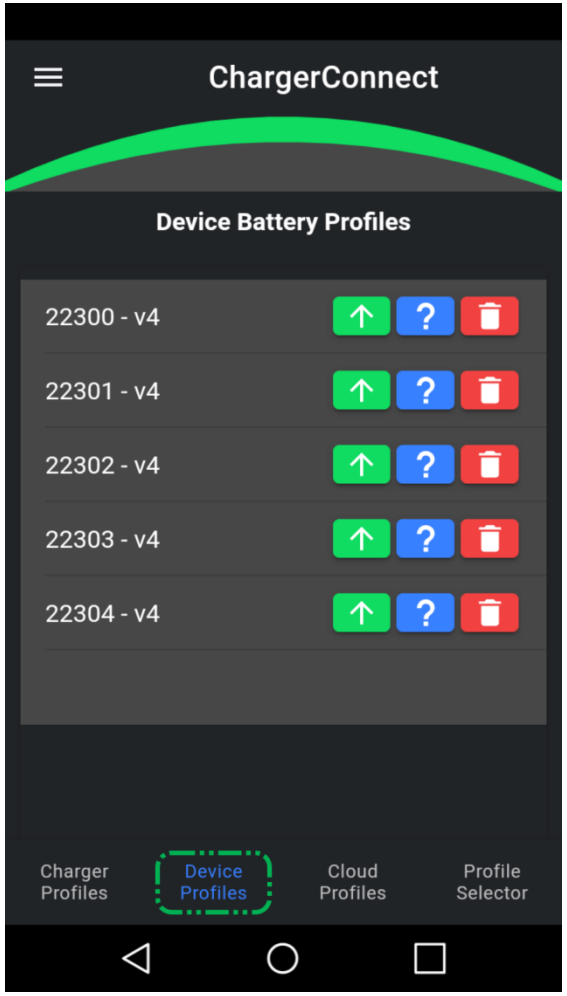
**Device Profiles Tab**

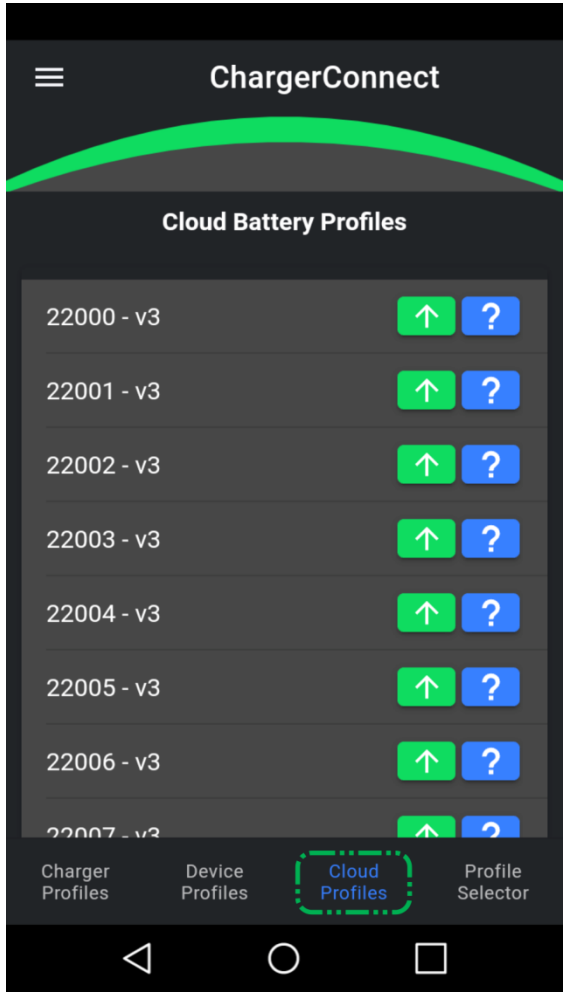
- Lists all battery profiles available on your smart phone or tablet (device).
- Upload battery profiles that reside on your smart phone or tablet (device) to the connected charger via the green arrow buttons 
  - You will be required to select the "Profile Slot Number". Summit Series II chargers can store up to 20 battery profiles locally. The local battery profiles are stored in "Slots", which are numbered 0-19. You can either select an empty Slot to store the battery profile that will be uploaded to the charger or a Slot that currently contains a battery profile, in which case the battery profile will be overwritten.
  - **NOTE: When a battery profile is uploaded to the connected charger, it automatically becomes the Active profile on the charger.**
- Blue question mark buttons provide detailed descriptions of the battery profiles. 
  - See the "Battery Profile Quick Reference" section below for information regarding the most commonly used battery profiles.
- Delete battery profiles that reside on your smart phone or tablet (device) via the red trash can button. 

**Cloud Profiles Tab**

- Lists all battery profiles available for download from the ChargerConnect Cloud.
- Download battery profiles from the Cloud to your smart phone or tablet (device) via the green arrow buttons. 
- Blue question mark buttons provide detailed descriptions of the battery profiles. 
  - See the "Battery Profile Quick Reference" section below for information regarding the most commonly used battery profiles.

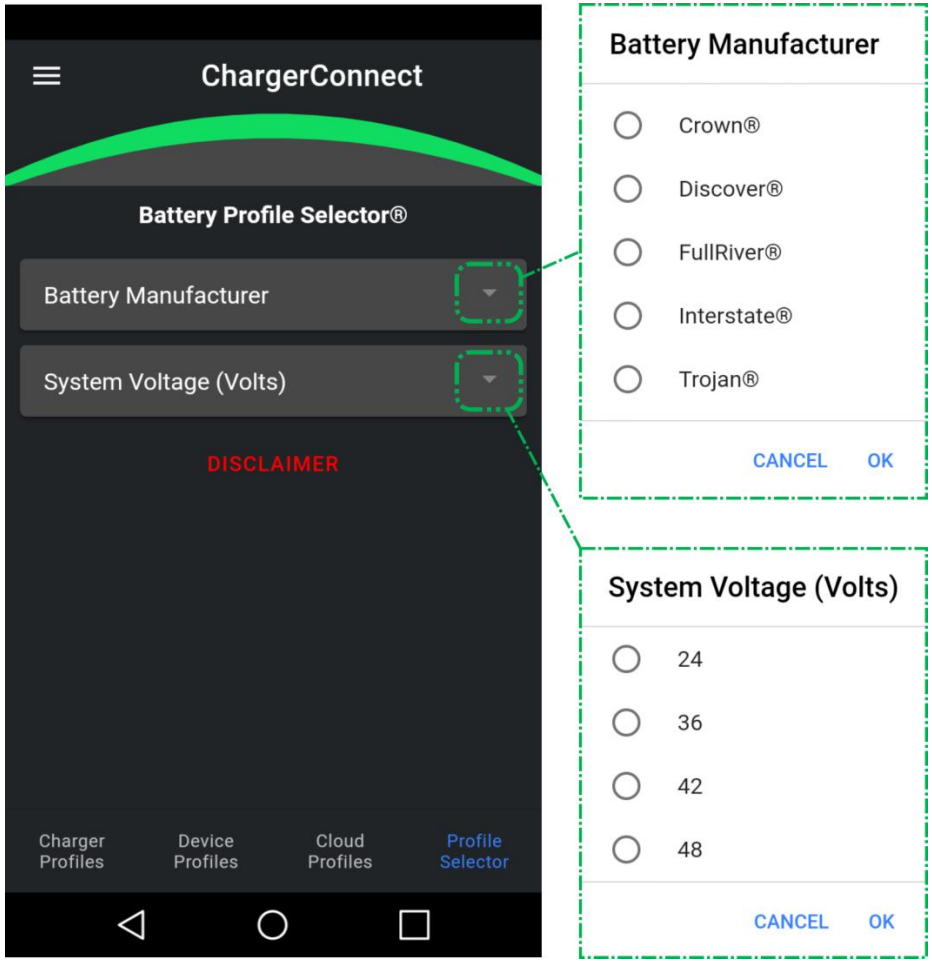

ChargerConnect
Charger Battery Profiles
UNSURE OF PROFILE TO SELECT? CLICK HERE
22300 - v4
22301 - v4
22302 - v4
22303 - v4
22304 - v4
22305 - v4
22306 - v4
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector


ChargerConnect
Device Battery Profiles
22300 - v4
22301 - v4
22302 - v4
22303 - v4
22304 - v4
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector


ChargerConnect
Cloud Battery Profiles
22000 - v3
22001 - v3
22002 - v3
22003 - v3
22004 - v3
22005 - v3
22006 - v3
Charger Profiles
Device Profiles
Cloud Profiles
Profile Selector

## Battery Profile Selector®

If you are unaware of the specific profile number required to charge your batteries. The Battery Profile Selector® will provide a recommended battery profile based on the battery manufacturer, system voltage, battery model, and charger model. This tool is accessible as a tab under "Battery Profile" menu and by clicking red "Unsure of Profile to Select? Click Here" red button on the "Charger Profiles" tab of "Battery Profile" menu.




- Touch the down arrow next to the "Battery Manufacturer" to view and select the brand of the vehicle batteries. If your brand is not listed, select "other."
- Touch the down arrow next to the "System Voltage" and choose the voltage of the vehicle
- Touch the "Submit" button to send your battery information to the database
- Touch the down arrow next to the "Battery Model" and choose the model # of the batteries

The Charger Model # will automatically populate, touch the submit button to view the recommended profile. Details of the suggested profile will be listed, then touch the "Make Profile Active" button to send the new battery profile to the charger. A red warning box will appear, select "OK" to confirm the request.

The charger needs to reboot to make the battery profile change, select "OK" to finalize the profile change request.

# Utilities

**From this page there is a tab which will allow a user to store a system or battery profile in their device (in the battery/system Device tab – same location if you downloaded a profile from the cloud) allowing a user to ultimately download a profile to the charger from e-mail.**

The location of the profile text file is as follows:

**Android**
The battery profile text file name must be **LesterElectricalBatteryProfile.txt** and located in the Download folder of the Device (phone/tablet)
The battery profile text file name must be **LesterElectricalSystemProfile.txt** and located in the Download folder of the Device (phone/tablet)

**iOS**
The battery profile text file name must be **LesterElectricalBatteryProfile.txt** and located in the ChargerConnect/NoCloud folder in the Device's (phone/tablet) File System
The battery profile text file name must be **LesterElectricalSystemProfile.txt** and located in the ChargerConnect/NoCloud folder in the Device's (phone/tablet) File System

If a file is not found and you try to upload a profile a pop up will occur stating that the file could not be found at location specified above.

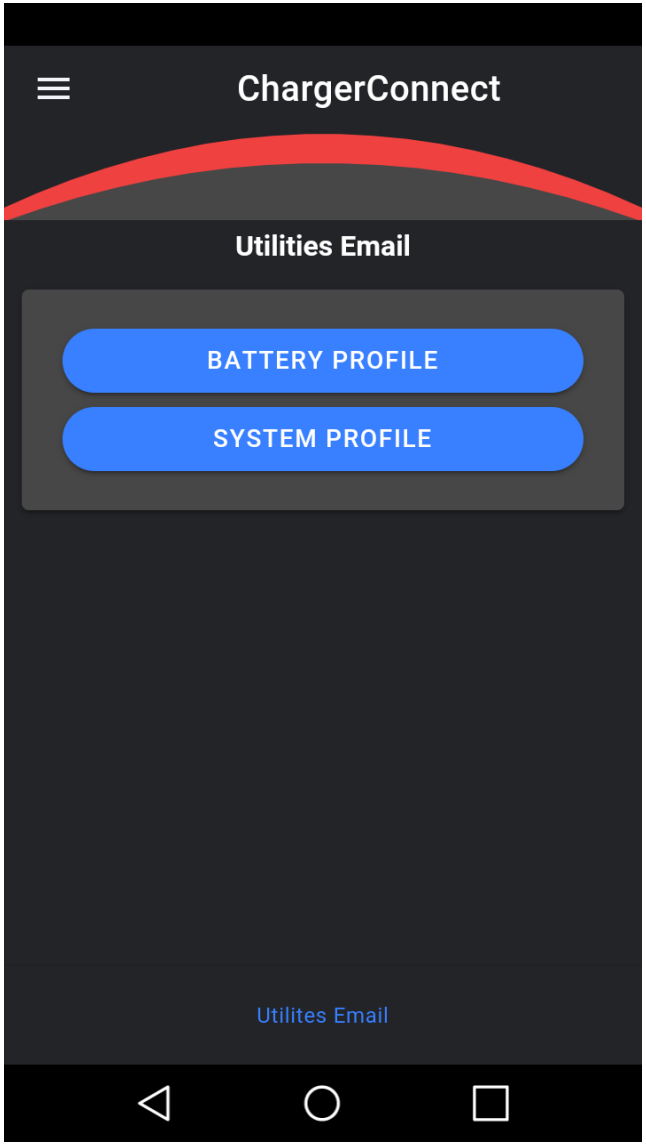
There is also a CAN functionality tab with charger's with the following firmware version (MAJOR.MINOR.BUILD):

If MAJOR >=3

Or

If (MINOR * 10 + BUILD) >= 16

If this criteria is NOT met only the e-mail functionality tab will be visible.

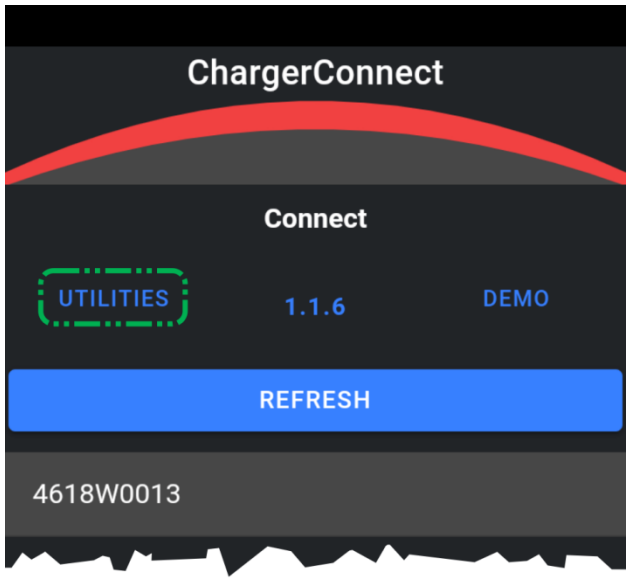


# Offline Mode

**The information provided in this mode is available without establishing a Bluetooth connection with the Summit II charger**

**Utilities – Charger History**

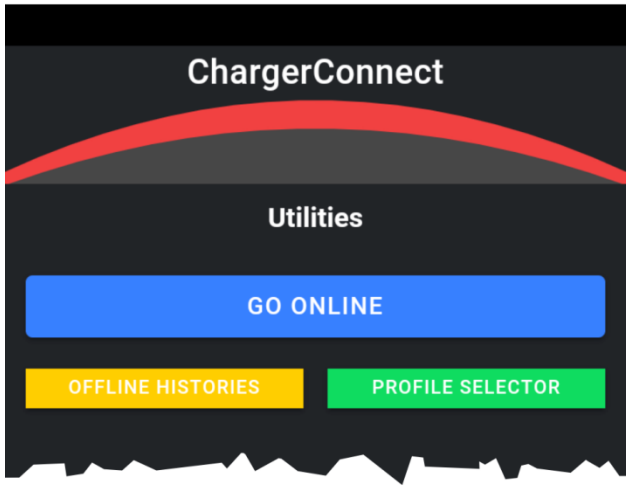
If you have previously downloaded charge cycle history records from a charger to your smart phone or tablet (device), these records can be accessed when you are not connected to the charger by using Utilities. This available by tapping the "Utilities" button on the "Connect" screen.




Once you enter Utilities, you can select the desired charger serial number from the list of all charger serial numbers that have charge cycle history records stored locally on your device. After selecting a charger serial number, you will have the option to view the charge cycle history records that are stored locally on your device for this charger serial number and upload these records to the ChargerConnect Cloud (see the "History" section for additional details).

A common use for Utilities is to transfer downloaded charge cycle history records from chargers in a location where your smart device does not have Internet access. You can use Utilities to upload these charge cycle history records to the ChargerConnect Cloud at a later time when your device does have Internet access.

"Profile Selector" is also available in Utilities by clicking on green "Profile Selector" button. Once in this option, the Offline Battery Profile Selector will appear. See "Battery Profile Selector" section for full details on this tool. Fill in answers to the questions using drop down lists provided for "Battery Manufacturer" and "System Voltage". After answering these two questions, hit blue "Submit" button. Two additional questions will appear with drop down lists for "Battery Model" and "Charger Model Number", based on the information submitted from the first two questions. After answering these two questions one additional blue 'Submit' option will appear, hitting this button will provide you the recommended battery profile based on information submitted. When finished with tool, use "Back" option listed at top left of screen to return to Utilities main screen. This




When finished with Utilities click blue "Go Online" button to return to the Connect screen.

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# SUMMIT II® SERIES

## 1050W, VERSION: V2
## SWITCH MODE
## INDUSTRIAL BATTERY CHARGER

## USER'S MANUAL

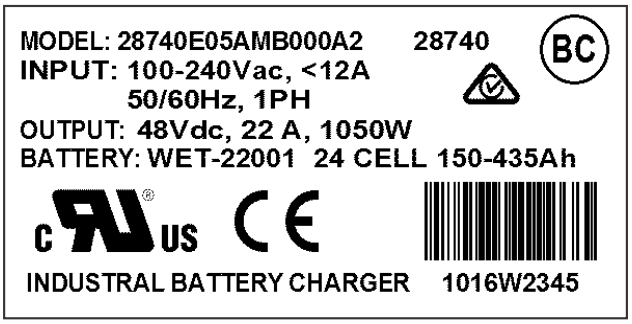
***Important Safety, Installation, Operation, and Maintenance Instructions***

Lester ELECTRICAL

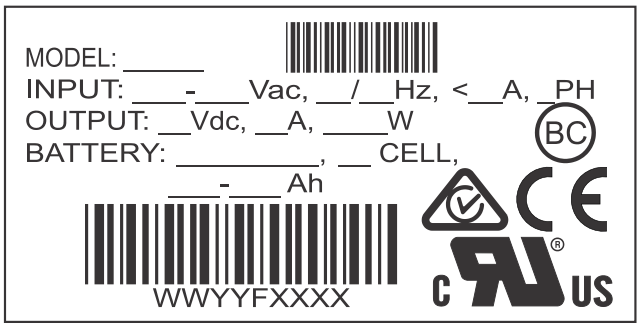
## CHARGER RATINGS LABEL

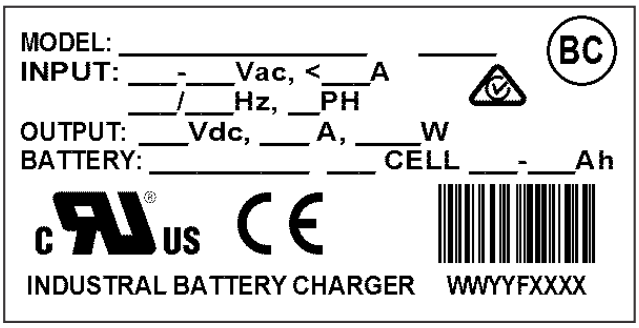
The ratings label is located on the front of the charger and provides the model (MODEL), serial number (located below the barcode at the bottom of the label), AC input ratings (INPUT), and DC output ratings (OUTPUT) of the charger. The BATTERY field indicates the factory-configured active battery profile type. The BATTERY field amp-hour (Ah) rating indicates the full range of battery capacities that are recommended for use with this charger. A different active battery profile may be required to optimize the charging of specific battery capacities within this range. Before (1) using the charger for the first time or (2) using the charger with a battery pack of a different type or capacity, use the ChargerConnect™ app to verify that the proper active battery profile is selected (see Section 8).

One of two styles of ratings label will be attached to your charger. Examples of both styles are shown below.


Please fill in the applicable blank label below with the information from the ratings label on your charger for future reference.




**⚠CAUTION: PRIOR TO OPERATING THE CHARGER, VERIFY THAT THE ACTIVE BATTERY PROFILE MATCHES THE BATTERIES IN YOUR EQUIPMENT AND THAT THE SYSTEM SETTINGS MATCH YOUR APPLICATION BY USING A SMART PHONE OR TABLET AND THE CHARGERCONNECT APP AS DESCRIBED IN SECTION 8.**

Document any configuration or settings changes that are made by marking the ratings label on your charger or on an additional label or tag attached to the charger.

**SAVE THIS MANUAL: Keep it in a location where it is available to anyone who may operate the charger.**

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# IMPORTANT SAFETY INSTRUCTIONS

1. **SAVE THESE INSTRUCTIONS – This manual contains important safety and operating instructions.**

2. **Before using battery charger, read all instructions and cautionary markings on battery charger, battery, and product using battery.**

**LOOK FOR THIS SYMBOL TO POINT OUT SAFETY PRECAUTIONS. IT MEANS: *BE ALERT—YOUR SAFETY IS INVOLVED.* IF YOU DO NOT FOLLOW THESE SAFETY INSTRUCTIONS, INJURY OR PROPERTY DAMAGE CAN OCCUR.**

3. **DANGER: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, CAREFULLY READ AND FOLLOW THESE IMPORTANT SAFETY AND OPERATING INSTRUCTIONS BEFORE INSTALLING OR OPERATING THE CHARGER.**

4. **INSTRUCTIONS IMPORTANTES CONCERNANT LA SECURITÉ.**

5. **WARNING: TO REDUCE THE RISK OF FIRE, INSTALL THIS BATTERY CHARGER ON A SURFACE OF NON-COMBUSTIBLE MATERIAL SUCH AS BRICK, CONCRETE, OR METAL.**

6. **DANGER: RISK OF ELECTRIC SHOCK. DISCONNECT CHARGER FROM BATTERY AND AC POWER BEFORE SERVICING. TURNING OFF THE CHARGER DOES NOT REDUCE THIS RISK.**

7. **DANGER: RISK OF ELECTRIC SHOCK. DO NOT TOUCH UNINSULATED PORTION OF AC OR DC CONNECTORS OR UNINSULATED BATTERY TERMINAL.**

8. **DANGER: RISQUE DE CHOCKS ÉLECTRIQUES. NE PAS TOUCHER LES PARTIES NON ISOLÉES DU CONNECTEUR DE SORTI OU LES BORNES NON ISOLÉES DE L'ACCUMULATEUR.**

9. **CAUTION: CHARGE ONLY BATTERIES OF THE SAME TYPE, VOLTAGE, CELL NUMBER, AND AMP-HOUR CAPACITIES AS SHOWN ON THE LABEL. OTHER TYPES OF BATTERIES MAY BURST CAUSING PERSONAL INJURY AND DAMAGE. BEFORE CHARGING ANY OTHER TYPE OF RECHARGEABLE BATTERY, CHANGE THE CHARGER SETTINGS AS RECOMMENDED BY THAT BATTERY MANUFACTURER.**

10. **ATTENTION: UTILISER POUR CHARGER UNIQUEMENT LES ACCUMULATEURS AU PLOMB À ELECTROLYTE LIQUIDE. D'AUTRES TYPES D'ACCUMULATEURS POURRAIENT ÉCLATER ET CAUSER DES.**

11. **DANGER: TO PREVENT ELECTRICAL SHOCK, DO NOT TOUCH EITHER AC OR DC UNINSULATED PARTS. MAKE SURE ALL ELECTRICAL CONNECTORS ARE IN GOOD WORKING CONDITION. DO NOT USE CONNECTORS THAT ARE CRACKED, CORRODED OR DO NOT MAKE ADEQUATE ELECTRICAL CONTACT. USE OF A DAMAGED OR DEFECTIVE CONNECTOR MAY RESULT IN A RISK OF OVERHEATING OR ELECTRIC SHOCK.**

12. **WARNING: HAZARD OF ELECTRIC SHOCK.**

13. **⚠WARNING: LEAD-ACID BATTERIES GENERATE EXPLOSIVE GASES. TO PREVENT ARCING OR BURNING NEAR BATTERIES, DO NOT DISCONNECT DC CHARGING CORD FROM BATTERIES WHEN THE CHARGER IS OPERATING. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES.**

14. **⚠WARNING: ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES. DO NOT PUT WRENCHES OR OTHER METAL OBJECTS ACROSS BATTERY TERMINAL OR BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY CAN RESULT.**

15. **⚠WARNING: BATTERIES PRODUCE HYDROGEN GAS, WHICH CAN EXPLODE IF IGNITED. NEVER SMOKE, USE AN OPEN FLAME, OR CREATE SPARKS NEAR THE BATTERY. VENTILATE THE AREA WHEN THE BATTERY IS CHARGING IN AN ENCLOSED PLACE.**

16. **⚠WARNING: LEAD-ACID BATTERIES CONTAIN SULFURIC ACID, WHICH MAY CAUSE BURNS. DO NOT GET ACID IN EYES, ON SKIN, OR CLOTHING. IF CONTACT WITH THE EYES OCCURS, FLUSH IMMEDIATELY WITH CLEAN WATER FOR 15 MINUTES AND OBTAIN MEDICAL ATTENTION.**

17. **⚠WARNING: ONLY A QUALIFIED SERVICE TECHNICIAN SHOULD PROGRAM OR SERVICE THIS EQUIPMENT.**

18. **⚠CAUTION: DO NOT OPERATE THE CHARGER IF IT HAS RECEIVED A SHARP BLOW, BEEN DROPPED, OR OTHERWISE DAMAGED. HAVE A QUALIFIED SERVICE TECHNICIAN EXAMINE AND REPAIR AS NEEDED.**

19. **⚠WARNING: DO NOT DISASSEMBLE THE CHARGER. HAVE THE CHARGER EXAMINED BY A QUALIFIED SERVICE TECHNICIAN. INCORRECT RE-ASSEMBLY OF THE CHARGER MAY RESULT IN AN EXPLOSION, ELECTRIC SHOCK, OR FIRE.**

20. **⚠CAUTION: MAKE SURE THE BATTERY SYSTEM HAS THE PROPERLY RATED VOLTAGE, AMP-HOURS, AND TYPE ("WET", "AGM", "GEL", "LITHIUM", "LIFEP04", ETC.) FOR THIS CHARGING SYSTEM.**

# SAVE THESE INSTRUCTIONS

# WICHTIGE SICHERHEITSANWEISUNGEN

**1. BEWAHREN SIE DIESE ANWEISUNGEN AUF. - Dieses Handbuch enthält wichtige Sicherheits- und Betriebsanweisungen.**

**2. Bevor Sie das Ladegerät verwenden, lesen Sie alle Anweisungen und Warnhinweise auf dem Ladegerät, der Batterie und dem Produkt, das die Batterie verwendet.**

**ACHTEN SIE AUF DIESES SYMBOL, UM DIE SICHERHEITSVORKEHRUNGEN ZU ERKENNEN. DAS BEDEUTET: *ACHTUNG—DAS BETRIFFT IHRE SICHERHEIT.* WENN SIE DIESE SICHERHEITSHINWEISE NICHT BEFOLGEN, KÖNNEN VERLETZUNGEN ODER SACHSCHÄDEN VERURSACHT WERDEN.**

**3. GEFAHR: UM DIE GEFAHR EINES BRANDES ODER EINES ELEKTRISCHEN SCHLAGS ZU REDUZIEREN, LESEN SIE DIESE WICHTIGEN SICHERHEITS- UND BEDIENUNGSANLEITUNGEN SORGFÄLTIG DURCH, BEVOR SIE DAS LADEGERÄT INSTALLIEREN ODER BETREIBEN.**

**5. ACHTUNG: UM FEUERGEFAHR ZU VERRINGERN, INSTALLIEREN SIE DIESES BATTERIELADEGERÄT AUF EINER OBERFLÄCHE AUS NICHT BRENNBAREM MATERIAL, WIE ZIEGELN, BETON ODER METALL.**

**6. GEFAHR: STROMSCHLAGGEFAHR. TRENNEN SIE DAS LADEGERÁT VOR DER WARTUNG VON DER BATTERIE UND NETZSTROM. DAS AUSSCHALTEN DES LADEGERÄTS VERRINGERT DIESES RISIKO NICHT.**

**7. GEFAHR: STROMSCHLAGGEFAHR. BERÜHREN SIE NICHT DEN UNINSULIERTEN TEIL VON AC- ODER DC-ANSCHLÜSSEN ODER UNINSULIERTEN BATTERIEANSCHLUSS.**

**9. ACHTUNG LADEN SIE NUR BATTERIEN DER GLEICHEN ART, SPANNUNG, ZELLENANZAHL UND AMP-STUNDEN-KAPAZITÄTEN, DIE AUF DEM ETIKETT ERLÄUTERT SIND. ANDERE ARTEN VON BATTERIEN KÖNNEN PLATZEN UND PERSONEN- UND SACHSCHÄDEN VERURSACHEN. BEVOR SIE EINE ANDERE AUFLADBARE BATTERIE AUFLADEN, ÄNDERN SIE DIE LADEGERÄTEINSTELLUNGEN, WIE SIE VON DIESEM BATTERIEHERSTELLER EMPFOHLEN WERDEN.**

**11. GEFAHR: UM EINEN ELEKTRISCHEN SCHLAG ZU VERMEIDEN, BERÜHREN SIE NIEMALS UNINSULIERTE AC-ODER DC-TEILE. VERWENDEN SIE KEINE ANSCHLUSSSTECKER DIE RISSIG ODER KORRIGIERT SIND, ODER DIE SICH NICHT KORREKT ANSTECKEN LASSEN. DIE VERWENDUNG EINES BESCHÄDIGTEN ODER FEHLERHAFTEN STECKVERBINDERS KANN ZU ÜBERHITZUNGS- ODER STROMSCHLAGGEFAHR FÜHREN.**

**12. ACHTUNG: STROMSCHLAGGEFAHR.**

13. **⚠ACHTUNG: BLEI SÄURE-BATTERIEN ERZEUGEN EXPLOSIVE GASE. TRENNEN SIE NICHT DAS NETZGERÄT WÄHREND DES LADENS VON DEN BATTERIEN UM LICHTBÖGEN ODER VERBRENNUNGEN IN DER NÄHE ZU VERMEIDEN. HALTEN SIE SPARKS, FLAMMEN UND RAUCHMATERIALIEN VON DEN BATTERIEN ENTFERNT.**

14. **⚠ACHTUNG: SCHÜTZEN SIE IMMER DIE AUGEN, WENN SIE MIT BATTERIEN ARBEITEN. KEINE SCHLÜSSELANHÄNGER ODER ANDERE METALLGEGENSTÄNDE ÜBER DEN BATTERIEANSCHLUSS ODER DIE BATTERIEPLATTE LEGEN. BOGEN ODER EXPLOSION DER BATTERIE KÖNNEN GESCHEHEN.**

15. **⚠ACHTUNG: BATTERIEN ERZEUGEN WASSERSTOFFGAS, DAS EXPLODIEREN KANN, WENN ES ENTZÜNDET WIRD. RAUCHEN SIE NIEMALS, VERWENDEN SIE NIE EINE OFFENE FLAMME ODER ERZEUGEN SIE NIEMALS FUNDEN IN DER NÄHE DER BATTERIE. BELÜFTEN SIE DEN GEGEND, WENN DIE BATTERIE IN EINEM GESCHLOSSENEN ORT AUFGELADEN WIRD.**

16. **⚠ACHTUNG: BLEI SÄURE-BATTERIEN ENTHALTEN SCHWEFELSÄURE, WELCHE VERBRENNUNGEN VERURSACHEN KANN. VERMEIDEN SIE KONTAKT MIT DEN AUGEN, DER HAUT ODER DER KLEIDUNG MIT DER SÄURE. FALLS ES KONTAKT MIT DEN AUGEN GEBEN SOLLTE, SPÜLEN SIE DEN AUGEN SOFORT 15 MINUTEN LANG MIT REINEM WASSER UND SUCHEN SIE EINEN ARZT AUF.**

17. **⚠ACHTUNG: NUR EIN QUALIFIZIERTER SERVICE-TECHNIKER SOLLTE DIESES GERÄT PROGRAMMIEREN ODER SERVISIEREN.**

18. **⚠ACHTUNG BETREIBEN SIE DAS LADEGERÄT NICHT, WENN ES EINEN SCHWEREN SCHLAG ERHALTEN HAT, FALLEN GELASSEN WURDE ODER ANDERWEITIG BESCHÄDIGT WURDE. BITTEN SIE EINEN QUALIFIZIERTEN WARTUNGSTECHNIKER ES ZU ÜBERPRÜFEN UND ZU REPARIEREN, FALLS ERFORDERLICH.**

19. **⚠ACHTUNG: DEMONTIEREN SIE DAS LADEGERÄT NICHT. BITTEN SIE EINEN QUALIFIZIERTEN SERVICE-TECHNIKER DAS LADEGERÄT ZU ÜBERPRÜFEN. FALSCHER WIEDERZUSAMMENBAU DES LADEGERÄTES KANN ZU EXPLOSION, ELEKTROSCHOCK ODER FEUER FÜHREN.**

20. **⚠ACHTUNG VERGEWISSERN SIE SICH, DASS DAS BATTERIESYSTEM FÜR DIESES LADESYSTEM DIE RICHTIG ANGEGEBENE SPANNUNG, AMP-STUNDEN UND TYP ("NASS", "AGM", "GEL", "LITHIUM", "LIFEP04", ETC.) HAT.**

# ANLEITUNG AUFBEWAHREN.

# IMPORTANTES CONSIGNES DE SÉCURITÉ

**1. GARDEZ CES CONSIGNES – Ce manuel contient d' importantes consignes de sécurité et le mode d'emploi.**

**2. Avant l'emploi de ce chargeur de batterie, lisez toutes les consignes et marques d'avertissement sur le chargeur de batterie, la batterie, et le produit utilisant cette batterie.**

**CHERCHEZ CE SYMBOLE POUR INDIQUER LES PRÉCAUTIONS DE SECURITÉ. CELA SIGNIFIE: SOYEZ VIGILANT—*VOTRE SÉCURITÉ EN DÉPEND. LE FAIT DE NE PAS* SUIVRE CES CONSIGNES DE SÉCURITÉ PEUT CAUSER DES BLESSURES ET ENDOMMAGER LA PROPRI*ÉTÉ*.**

**3. DANGER: POUR RÉDUIRE LE RISQUE D'INCENDIE OU DE DÉCHARGE ÉLECTRIQUE, LISEZ ATTENTIVEMENT ET SUIVEZ CES CONSIGNES DE SÉCURITÉ, ET MODE D'EMPLOI AVANT L'INSTALLATION OU L'USAGE DU CHARGEUR.**

**5. AVERTISSEMENT: POUR RÉDUIRE LE RISQUE D'INCENDIE, INSTALLEZ CE CHARGEUR DE BATTERIE SUR UNE SURFACE EN MATÉRIEL NON-COMBUSTIBLE COMME BRIQUE, BÉTON OU MÉTAL.**

**6. DANGER: RISQUE DE DÉCHARGE ÉLECTRIQUE. DÉBRANCHEZ LE CHARGEUR DE LA BATTERIE ET DU COURANT ALTERNATIF AVANT L'ENTRETIEN. L'ARRÊT DU CHARGEÙR NE RÉDUISANT POINT CE RISQUE.**

**7. DANGER: RISQUE DE DÉCHARGE ÉLECTRIQUE. NE TOUCHEZ PAS LES PARTIES NON-ISOLÉES DES CONNECTEURS AC OU DC, OU LE BORNE NON-ISOLÉ DE LA BATTERIE.**

**9. ATTENTION: NE CHARGEZ SEULEMENT QUE LES BATTERIES DU MÊME TYPE, TENSION, NOMBRE DE CELLULES, ET CAPACITÉ AMP-HEURE COMME IL EST INDIQUÉ SUR L'ÉTIQUETTE. D'AUTRES TYPES DE BATTERIES PEUVENT ÉCLATER, CAUSANT DES BLESSURES CORPORELLES ET DES DÉGÂTS. AVANT DE CHARGER TOUT AUTRE TYPE DE BATTERIE RECHARGEABLE, CHANGEZ LES PARAMÈTRES DU CHARGEUR COMME LE FABRICANT DE CETTE BATTERIE L'A RECOMMENDÉ.**

**11. DANGER: POUR ÉVITER LES DÉCHARGES ÉLECTRIQUS, NE TOUCHEZ PAS LES PARTIES NON-ISOLÉES, NI AC NI DC. ASSUREZ-VOUS QUE TOUS LES CONNECTEURS ÉLECTRIQUES SONT EN BON ÉTAT DE FONCTIONNEMENT. N'UTILISEZ PAS LES CONNECTEURS QUI SONT CRAQUELÉS, CORRODÉS NI NE FAITES CONTACT ÉLECTRIQUE ADÉQUAT. L'EMPLOI D'UN CONNECTEUR ENDOMMAGÉ OU DÉFECTUEUX PEUT PROVOQUER UN RISQUE DE SURCHAUFFE OU DE DÉCHARGE ÉLECTRIQUE.**

**12. AVERTISSEMENT: DANGER DE DÉCHARGE ÉLECTRIQUE.**

13. **⚠AVERTISSEMENT: LES BATTERIES PLOMB-ACIDE PRODUISENT DES GAZ EXPLOSIFS. POUR ÉVITER LES ARCS ÉLECTRIQUES OU LES BRÛLURES PRÈS DES BATTERIES, NE DÉBRANCHEZ PAS LE CÂBLE DC DES BATTERIES QUAND LE CHARGEUR EST EN MARCHE. MAINTENEZ À L'ÉCART DES BATTERIES TOUTE ETINCELLE, FLAMME ET MATIÈRE FUMANTE.**

14. **⚠AVERTISSEMENT:N'OUBLIEZ JAMAIS DE PROTÉGER VOS YEUX LORSQUE VOUS TRAVAILLEZ PRÈS DES BATTERIES. NE POSEZ JAMAIS LES CLÉS OU AUTRES OBJETS MÉTALLIQUES À TRAVERS LES BORNES DE LA BATTERIE OU DESSUS LA BATTERIE. CAR CELA PEUT CAUSER UN ARC ÉLECTRIQUE OU UNE EXPLOSION DE LA BATTERIE.**

15. **⚠AVERTISSEMENT: LES BATTERIES PRODUISENT DE L'HYDROGÈNE, QUI PEUT EXPLOSER SI MISE À FEU. NE FUMEZ JAMAIS, NI N'UTILISEZ UNE FLAMME, NI NE CRÉEZ DES ÉTINCELLES PRÈS DE LA BATTERIE. AÉREZ LA PLACE QUAND LA BATTERIE EST EN TRAIN DE CHARGER DANS UN ENDROIT FERMÉ.**

16. **⚠AVERTISSEMENT: LES BATTERIES PLOMB-ACIDE CONTIENNENT DE L'ACIDE SULFURIQUE, QUI PEUT CAUSER DES BRÛLURES. N'ATTRAPEZ PAS L' ACIDE DANS LES YEUX, NI SUR LA PEAU, NI SUR LES VÊTEMENTS. EN CAS DE CONTACT AVEC LES YEUX, RINCEZ IMMÉDIATEMENT AVEC DE L'EAU PROPRE PENDANT 15 MINUTES PUIS ACCEDER AUXSOINS MÉDICAUX.**

17. **⚠AVERTISSEMENT: SEUL UN TECHNICIEN DE SERVICE QUALIFIÉ POURRAIT PROGRAMMER OU RÉVISER CET ÉQUIPEMENT.**

18. **⚠ATTENTION: NE FAITES PAS MARCHER LE CHARGEUR S'IL A SUBI UN COUP VIOLENT, EST TOMBÉ, OU AUTREMENT ENDOMMAGÉ. FAITES-LE VOIR PAR UN TECHNICIEN DE SERVICE QUALIFIÉ, ET LE FAIRE RÉPARER SI BESOIN EST**

19. **⚠AVERTISSEMENT: NE DÉMONTEZ PAS LE CHARGEUR. FAITES-LE VOIR PAR UN TECHNICIEN DE SERVICE QUALIFIÉ. LE RASSEMBLAGE INCORRECT DU CHARGEUR PEUT RÉSULTER EN EXPLOSION, DÉCHARGE ÉLECTRIQUE, OU INCENDIE.**

20. **⚠ATTENTION: ASSUREZ-VOUS QUE LE SYSTÈME DE BATTERIE A LA CORRECTE TENSION NOMINALE, L'AMP-HEURE, ET LE TYPE ("HUMIDE", "AGM", "GEL", "LITHIUM", "LIFEP04", ETC.) POUR CE SYSTÈME DE BATTERIE.**

# GARDEZ CÉ CONSIGNES

## 1. INTRODUCTION

This switch mode (high frequency) industrial battery charger features advanced charge and termination algorithms designed to optimize both daily battery capacity and overall battery life. The charger is convection cooled with no moving parts, sealed, and designed to provide maximum reliability. The universal AC input enables the charger to be used with a wide range of AC voltages and frequencies, and the charger includes high efficiency and power factor correction. Interface features of the charger include four (4) LEDs. The 1050W charger models are also capable of automatic multi-voltage DC charging, which enables automatic DC output voltage detection and adjustment based on the battery pack connected to it.

The charger features Bluetooth® wireless communication, which enables a smart phone or tablet running the ChargerConnect™ app to be used to:

- View the real-time charge cycle status
- Download charge cycle history records from the charger
- Upload charge cycle history records to the Cloud for access anywhere in the world
- Select the active battery profile
- Download new battery profiles from the Cloud
- Upload battery profiles to the charger

The charger was factory-configured with the active battery profile that was requested as part of the original order from Lester Electrical. The charger was also factory-configured for mounting on-board a battery-powered vehicle/machine or for off-board use in a shelf or portable application per the original order from Lester Electrical. Before (1) using the charger for the first time or (2) using the charger with a battery pack of a different type or capacity, use the ChargerConnect app to verify that the proper active battery profile is selected and that the system settings match your application (see Section 8).

**⚠CAUTION: PRIOR TO OPERATING THE CHARGER, VERIFY THAT THE ACTIVE BATTERY PROFILE MATCHES THE BATTERIES IN YOUR EQUIPMENT AND THAT THE SYSTEM SETTINGS MATCH YOUR APPLICATION BY USING A SMART PHONE OR TABLET AND THE CHARGERCONNECT APP AS DESCRIBED IN SECTION 8.**

## 2. RECEIVING AND INSTALLING THE CHARGER

Unpack the charger and examine it for shipping damage. In the event that shipping damage is found, report it as a claim with the freight company.

**⚠WARNING: REPLACE WORN, DAMAGED, OR CUT ELECTRICAL CORDS AND PLUGS IMMEDIATELY.**

Do not operate the charger with a damaged AC or DC cable or connector. Do not operate the charger if it has received a sharp blow, was dropped, or was otherwise damaged in any way. Contact your dealer.

**⚠WARNING: DO NOT INSTALL THE CHARGER ON OR NEAR FLAMMABLE MATERIALS. POSITION THE CHARGER ON A FOUNDATION OF STONE, BRICK, CONCRETE OR GROUNDED METAL.**

**⚠WARNING: CHARGERS CAN IGNITE FLAMMABLE MATERIALS AND VAPORS. DO NOT USE NEAR FUELS, GRAIN DUST, SOLVENTS, THINNERS, OR OTHER FLAMMABLES.**

Proper installation is important to achieve optimum performance and life from the charger and batteries. Allow as much free air space around the charger as possible. Please refer to the Specifications section for specific storage and operating environmental specifications.

The most favorable mounting orientations of the charger are shown in Figure 2-1. For on-board use, the most favorable way to mount the charger is with the charger base bolted to a 0.1 inch (2.5 mm) minimum thick metal plate. This provides both a strong structural mounting and good thermal conductive cooling (examples are shown in Figure 2-1). A poor thermal conductive mounting material such as plastic or wood would be less favorable for cooling.

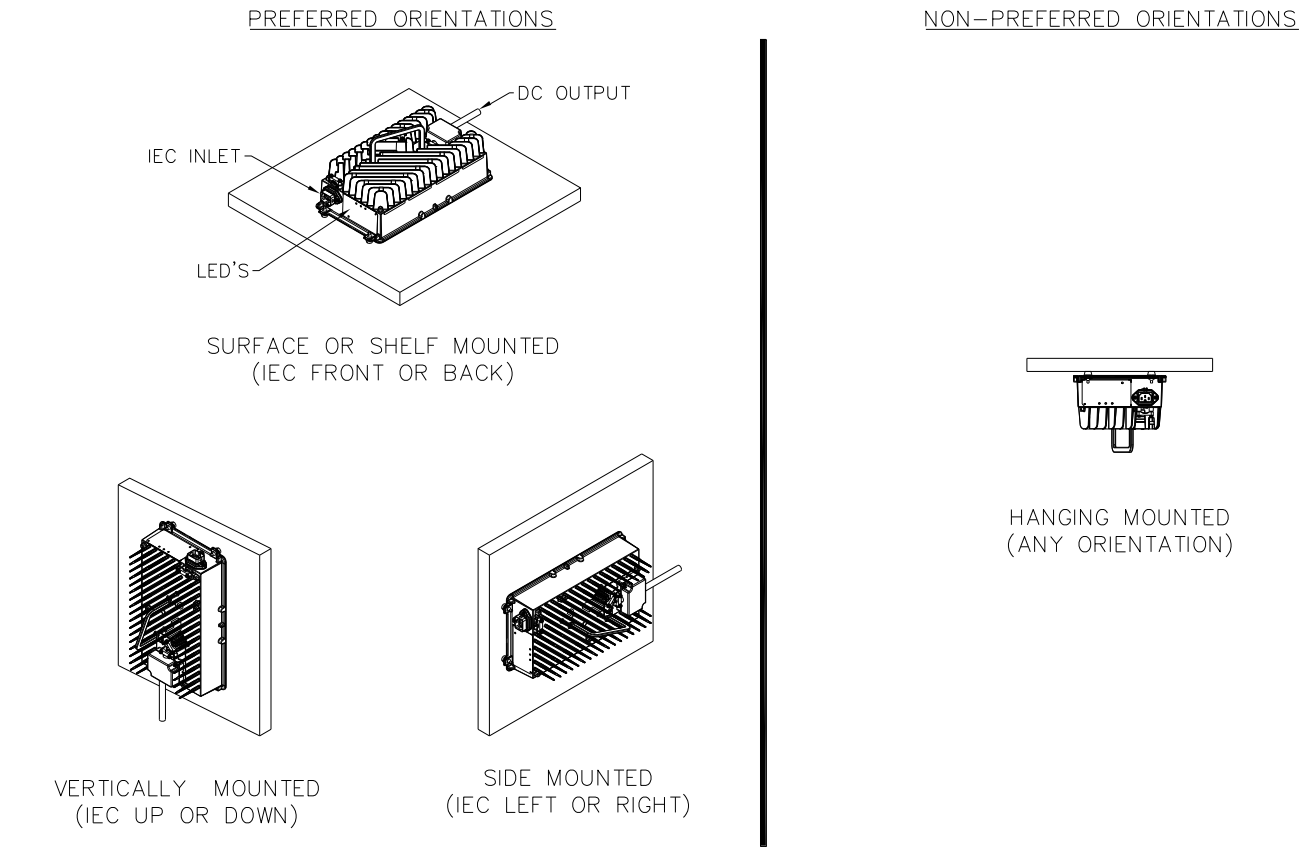



***Figure 2-1: Charger Mounting Recommendations***

The charger dimensions and mounting hole locations are shown in Figure 2-2. For off-board use, an optional handle is available for ease in carrying. The charger case also has routing and securing locations for the AC and DC cordsets when when they need to be routed to the opposite ends as shown in Figure 2-3.

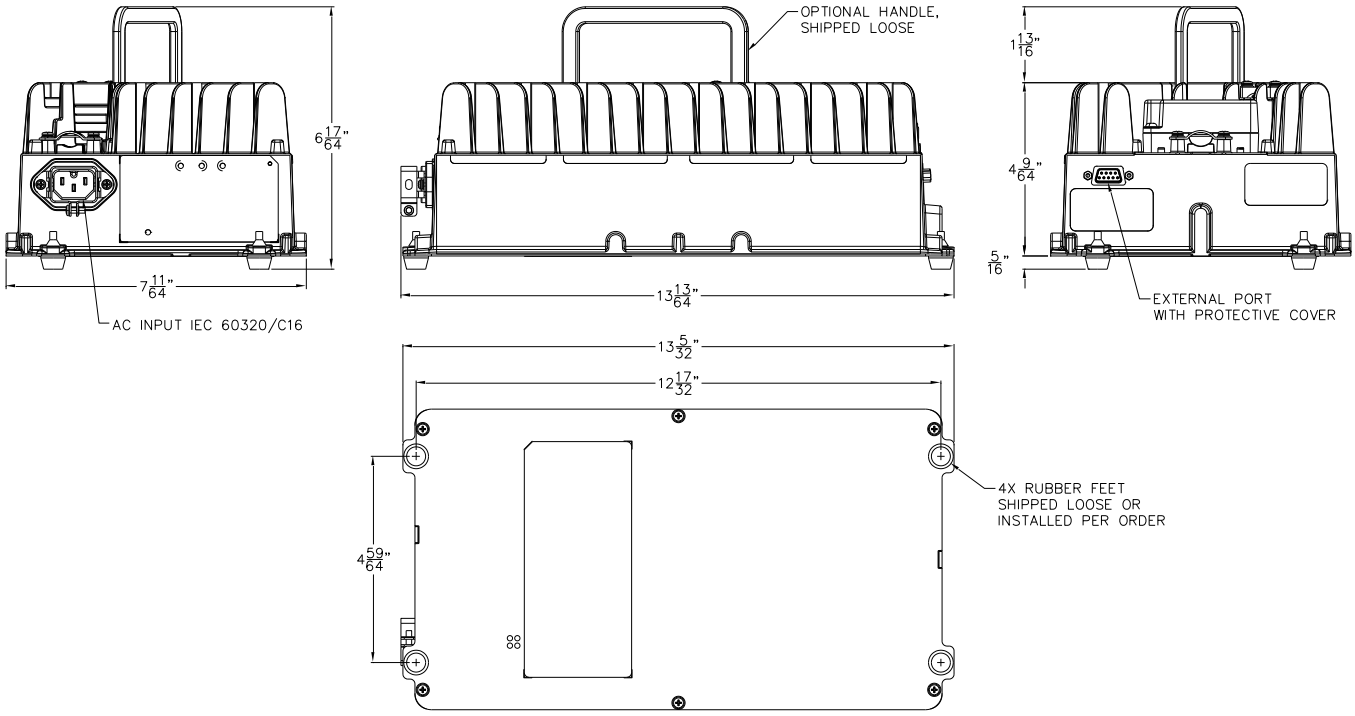



***Figure 2-2: Charger Dimensions and Mounting Hole Locations***

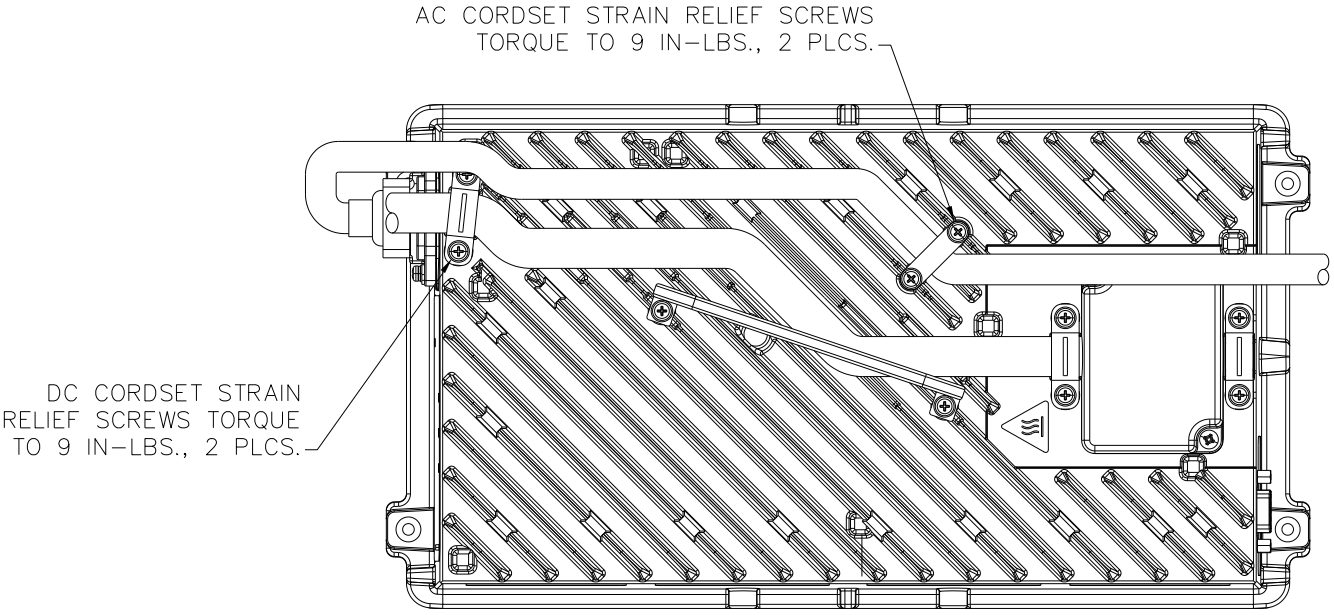



***Figure 2-3: AC & DC Cordset Routing***

## 3. BATTERY TYPE

This charger contains multiple battery profiles for different battery types (including wet/flooded, AGM, gel, and lithium) and capacities of batteries. The charger was factory-configured with the active battery profile that was requested as part of the original order from Lester Electrical. Before (1) using the charger for the first time or (2) using the charger with a battery pack of a different type or capacity, use the ChargerConnect app to verify the proper active battery profile is selected. If the proper battery profile is not available on the charger, the ChargerConnect app can be used to download the appropriate battery profile from the Cloud. If the battery type you will be charging is not available via the ChargerConnect app Cloud (for example, a specific lithium-ion brand or chemistry), contact Lester Electrical for more information. See Section 8 for additional details.

If the active battery profile is changed, mark the charger ratings label or add an additional label or tag.

**⚠CAUTION: THIS CHARGER IS FOR USE ONLY WITH BATTERY SYSTEMS OF THE SAME TYPE AS THE ACTIVE BATTERY PROFILE. BATTERIES IMPROPERLY MATCHED WITH THE CHARGER MAY BURST CAUSING PERSONAL INJURY AND DAMAGE TO THE BATTERIES OR CHARGER.**

Battery manufacturers frequently use the same battery cases for different battery types. Wet/flooded batteries have removable cell caps. Water electrolyzed by discharging and charging the battery is replaced through these openings. Sealed (AGM, gel, and lithium) batteries are generally distinguished by non-removable cell caps. The physical appearance of the battery case is frequently the same as a wet battery, though the cell caps are generally not removable. Refer to the battery manufacturer's information panel on the battery case to determine the type battery you have. If the information panel is missing or not legible, do not use the battery.

If you have questions regarding which battery profile to select for use with your particular battery pack, contact your dealer for assistance.

## 4. OFF-BOARD (SHELF) VERSUS ON-BOARD (BUILT-IN) CHARGERS

This section describes how the charger operates when the charger type is set to Off-board or On-board. Based on your application, this setting can be changed via the ChargerConnect app under “System Profile” (see Section 8).

The charger was factory-configured with the active battery profile that was requested as part of the original order from Lester Electrical. The charger was also factory-configured for mounting on-board a battery-powered vehicle/machine or for off-board use in a shelf or portable application per the original order from Lester Electrical. Before (1) using the charger for the first time or (2) using the charger with a battery pack of a different type or capacity, use the ChargerConnect app to verify that the proper active battery profile is selected and that the system settings match your application (see Section 8).

### 4.1 Off-Board Chargers

Off-board chargers are designed to be used in shelf or portable applications. If the AC input plug is connected to AC power, a new charge cycle automatically starts when the DC output is connected to a battery pack of the proper voltage. Disconnecting and reconnecting AC power while the DC output remains connected to a battery pack WILL NOT automatically start a new charge cycle. Disconnecting the DC output from the battery pack IS REQUIRED to automatically start a new charge cycle.

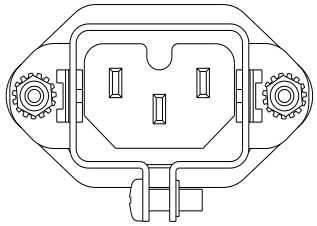
### 4.2 On-Board Chargers

On-board chargers are designed to be mounted on electric vehicles/equipment. If the DC output is connected to a battery pack of the proper voltage, a charge cycle automatically starts when the AC input plug is connected to AC power (unless a safety period of time has not passed since the successful completion of the previous charge cycle). Disconnecting the DC output from the battery pack IS NOT REQUIRED to automatically start a new charge cycle.

## 5. AC INPUT

**⚠CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK OR FIRE, DISCONNECT AC POWER FROM THE CHARGER BEFORE INSTALLING OR REMOVING UNIT.**

The charger has an AC input rating of 100-240 volts, 50-60 hertz, single-phase. The charger has an AC operating range of 85-265 volts, 45-65 hertz. Below 108 volts, the charger may reduce output power.



The charger is equipped with an IEC 60320 C16 inlet for the AC input power as shown. This allows the AC power cordset to be selected with a proper plug compatible with local electrical codes. The AC power cordset must be a minimum of 16 AWG (1.5 $mm^2$) on 120Vac inputs or a minimum of 18 AWG (1.0 $mm^2$) on 240Vac inputs. An AC cord clamp is also included to retain the AC power cordset IEC 60320 C15 connector. Loosen the screw on the side of the clamp as shown before inserting the C15 connector. Fully insert the connector into the charger inlet and then tighten the AC cord clamp screw to secure the AC power cordset to the charger.

The charger must be grounded to reduce the risk of electric shock and is equipped with an IEC 60320 C16 inlet having an equipment-grounding conductor and a grounding socket. The installed AC power cordset must be plugged into an outlet that is properly installed and grounded in accordance with all applicable electrical codes and ordinances.

If this charger includes the UL Listed symbol on its ratings label, it is provided with a cord set for connection to outlets operating at nominal 120 volts (or 240 volts as appropriate). If the input plug does not fit the power outlet, contact Lester Electrical for the proper cord set terminating in an attachment plug of the proper configuration for the power outlet.

**DANGER: NEVER ALTER THE AC POWER CORDSET OR PLUG PROVIDED. IF IT WILL NOT FIT AN OUTLET, OBTAIN THE CORRECT CHARGER IEC AC POWER CORDSET FOR THE OUTLET, OR HAVE A PROPER OUTLET INSTALLED BY A QUALIFIED ELECTRICIAN. IMPROPER CONNECTION CAN RESULT IN A RISK OF ELECTRIC SHOCK.**

If an extension cord is necessary, it must be a 3-conductor, 12 AWG (2.5 $mm^2$) minimum for 120Vac input and 14 AWG (2.0 $mm^2$) minimum for 240Vac input, heavy-duty cord with ground,. It must also be in good electrical condition and as short as possible, 25 ft (7.6 m) maximum. Make sure that the pins on the plug of the extension cord are the same number, size, and shape as the AC power cordset plug on the charger. The use of an improper extension cord could result in a risk of fire or electrical shock.

Locate all cords so that they will not be stepped on, tripped over, or otherwise subjected to damage, stress, or accidentally disconnected.

**CAUTION: VERIFY THAT THE AC POWER CORDSET IS FULLY ENGAGED IN THE IEC INLET AND CANNOT BE PULLED LOOSE BEFORE USING THE CHARGER.**

**DANGER: RISK OF ELECTRIC SHOCK! CONNECT THE AC SUPPLY CORDSET DIRECTLY TO A GROUNDED, 3-WIRE OUTLET. DO NOT TOUCH UNINSULATED PORTION OF DC OUTPUT TERMINALS OR BATTERY TERMINALS. REPLACE DEFECTIVE CORDS, WIRES, OR CONNECTORS IMMEDIATELY.**

# 6. DC OUTPUT

**WARNING: LEAD-ACID BATTERIES GENERATE EXPLOSIVE GAS. CHARGE ONLY IN WELL VENTILATED AREAS. TO PREVENT ARCING OR BURNING NEAR BATTERIES, DO NOT DISCONNECT THE DC CHARGING CONNECTOR(S) FROM THE BATTERIES WHEN THE CHARGER IS OPERATING. IF THE CHARGE CYCLE MUST BE INTERRUPTED, UNPLUG THE AC POWER CORD BEFORE DISCONNECTING THE DC OUTPUT CONNECTOR(S) FROM THE BATTERIES. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES. TO REDUCE THE RISK OF FIRE, DO NOT USE THE CHARGER NEAR FLAMMABLE MATERIALS OR VAPORS.**

Only charge batteries of the same type, voltage, number of cells, and amp-hour capacities listed on the charger ratings label. Before (1) using the charger for the first time or (2) using the charger with a battery pack of a different type or capacity, use the ChargerConnect app to verify that the proper active battery profile is selected (see Section 8).

## 6.1 Auto Voltage Mode

The 1050W charger models support automatic multi-voltage DC charging, referred to as Auto Voltage Mode. Auto Voltage Mode provides automatic DC output voltage detection and adjustment so that battery packs of nominal 48V, 36V, and 24V can be charged with a single charger without any configuration changes needing to be made to the charger when switching between battery packs of different nominal voltages.

When connected to a 1050W charger model with the ChargerConnect app (see Section 8), the “System Profile” screen will include an “Auto Profile” selection box, which provides the following three (3) options:

- **OFF:** Single voltage mode – you MUST ensure that the nominal DC voltage of the “Active Battery Profile” for the charger matches the nominal DC voltage of the connected battery pack.
- **PER VOLTAGE PROFILES**: A battery profile can be assigned for 48V, a different battery profile can be assigned for 36V, and yet a different battery profile can be assigned for 24V. The proper battery profile is automatically selected based on the connected battery pack. This mode is primarily used when the charger will be charging 48V, 36V, and 24V nominal battery packs [or any combination of two (2) of these voltages] where the battery packs are of different types and/or capacities so using the “Scalable Profile” mode is not appropriate.

- **SCALABLE PROFILE**: The nominal DC voltage of the “Active Battery Profile” is automatically scaled to 48V, 36V, or 24V based on the connected battery pack.

**NOTE: If the charger is currently set to “Per Voltage Profiles” or “Scalable Profile” mode, and you set the “Auto Profile” selection box to “Off”, you MUST ensure that the nominal DC voltage of the “Active Battery Profile” for the charger matches the nominal DC voltage of the connected battery pack via the “Battery Profiles” screen in the ChargerConnect app.**

When Auto Voltage Mode is active (either “Per Voltage Profiles” or “Scalable Profile”) the ChargerConnect app “Dashboard” screen provides the status of the proprietary algorithm that executes at the beginning of the charge cycle by displaying the “Auto Battery Voltage Detection” as a status percentage and the “Detected Battery Pack Voltage”.

## 6.2 DC Output Cordset

The DC output cordset includes a connector, plug, or terminals. The polarity of the charger DC connector/plug/terminals must be the same as the battery connector/receptacle/terminals. The BLACK DC cable must be connected to the battery negative (-), and the WHITE or RED DC cable must be connected to the battery positive (+). The charger will not operate if the polarity is reversed.

**⚠WARNING: CHARGER DC CORDSET MUST HAVE A MINIMUM OF 12AWG WIRE SIZE FOR PROPER HEAT DISSIPATION. TO PREVENT RISK OF FIRE, DO NOT USE SMALLER GAUGE WIRE.**

The DC cordset attaches to the external DC terminal block on the charger. Remove the touch proof cover (if pre-installed) to expose the DC terminal block as shown in Figure 6.2-1. Based on the DC cordset connector/plug/terminals, use Table 6.2-1 to determine the correct Configuration Number, and then attach the DC cordset wires as shown in Figure 6.2-2. Torque the screws for the Battery Positive and Battery Negative connections to 18 in-lbs (2.0 N-m). Torque the screws for Terminal 1 (Battery Temperature Sense or CANH) and Terminal 2 (Vehicle Lockout or CANL) connections to 12 in-lbs (1.35 N-m). Place the strain relief over the DC cordset cable/wires. When individual wires are used for on-board applications, place the foam rubber gasket that comes on the cordset under the strain relief, center the wires, and then tighten the strain relief screws and torque them to 9 in-lbs (1 N-m). This prevents the wires from getting pinched on the side of the strain relief when tightened. Replace the terminal block cover, and torque the cover screws to 9 in-lbs (1 N-m). The terminal block cover is reversible, so either strain relief can be used.

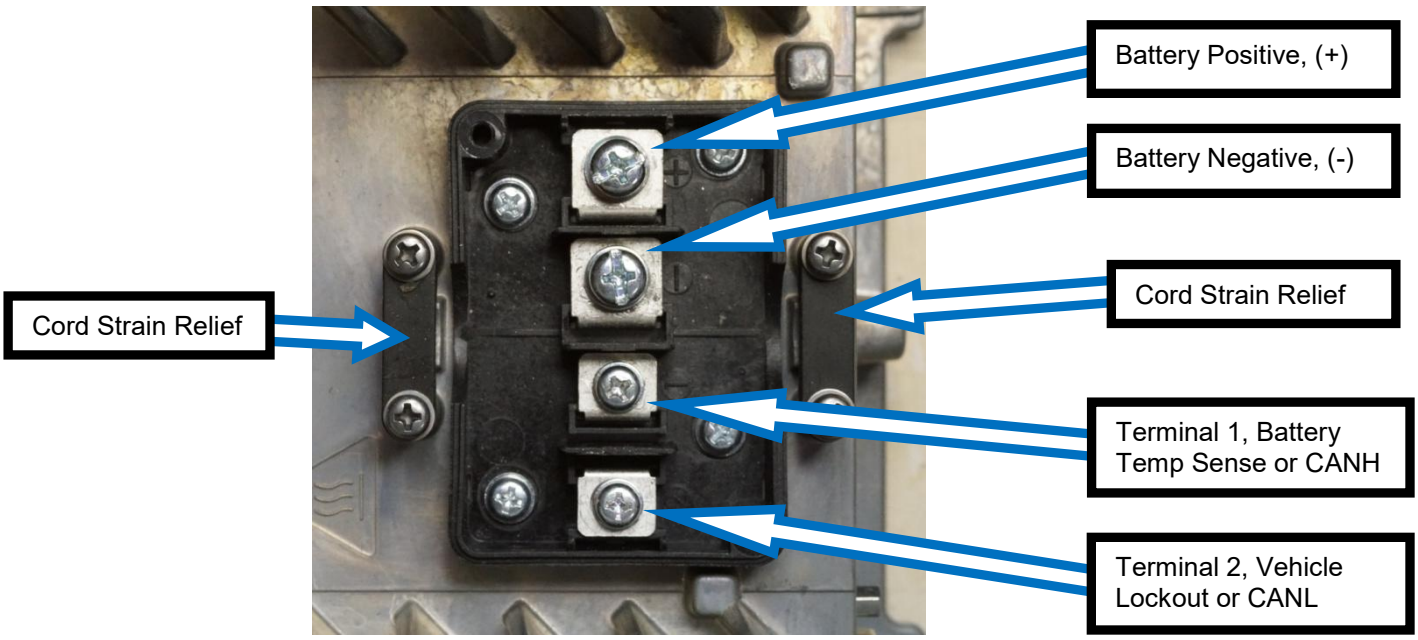



***Figure 6.2-1: DC Terminal Block***

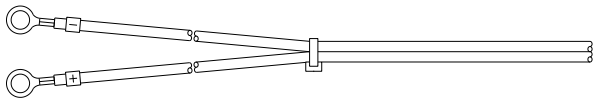
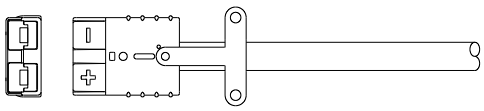
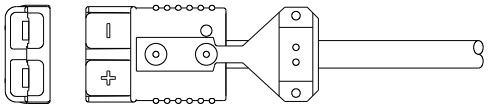
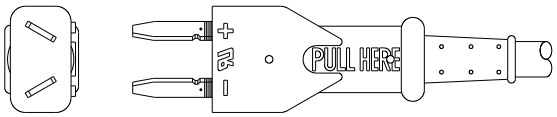
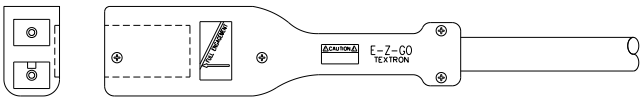
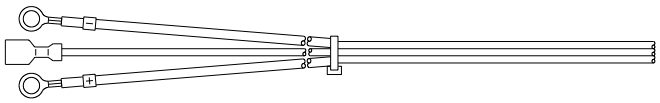
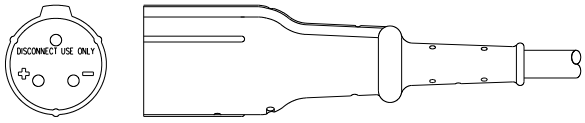
| Number of Wires | DC Connector | Connector Image | Configuration # |
|---|---|---|---|
| 2 | Ring Terminals |  | 1 or 4 |
| 2 | Anderson SB50 |  | 1 or 4 |
| 2 | Anderson SB175 |  | 1 or 4 |
| 2 | 2-Blade Gray Molded (Crowsfoot) |  | 1 or 4 |
| 2 | E-Z-GO PowerWise 2-Pin 36V or 48V |  | 1 or 4 |
| 3 | Ring Terminals with QD Lockout |  | 2 or 5 |
| 3 | Club Car 3-Pin Molded |  | 3 or 6 |

***Table 6.2-1: Common DC Output Connector Configurations***

As shown in Figure 6.2-1, Terminal 1 and Terminal 2 on the terminal block can be factory ordered one of two ways: 1) with CANbus communication signals CANH and CANL, or 2) Battery Temperature Sense and Vehicle Lockout (see Section 7). Use the information in Table 6.2-2, to determine by model, the type of signals present on your charger.

| Model | Terminal 1 | Terminal 2 |
|---|---|---|
| 28750, 29410, 30410 | Battery Temperature Sense | Vehicle Lockout |
| 28760, 29420, 30420 | CANH | CANL |

***Table 6.2-2: Terminal Block Signal Configuration by Model***

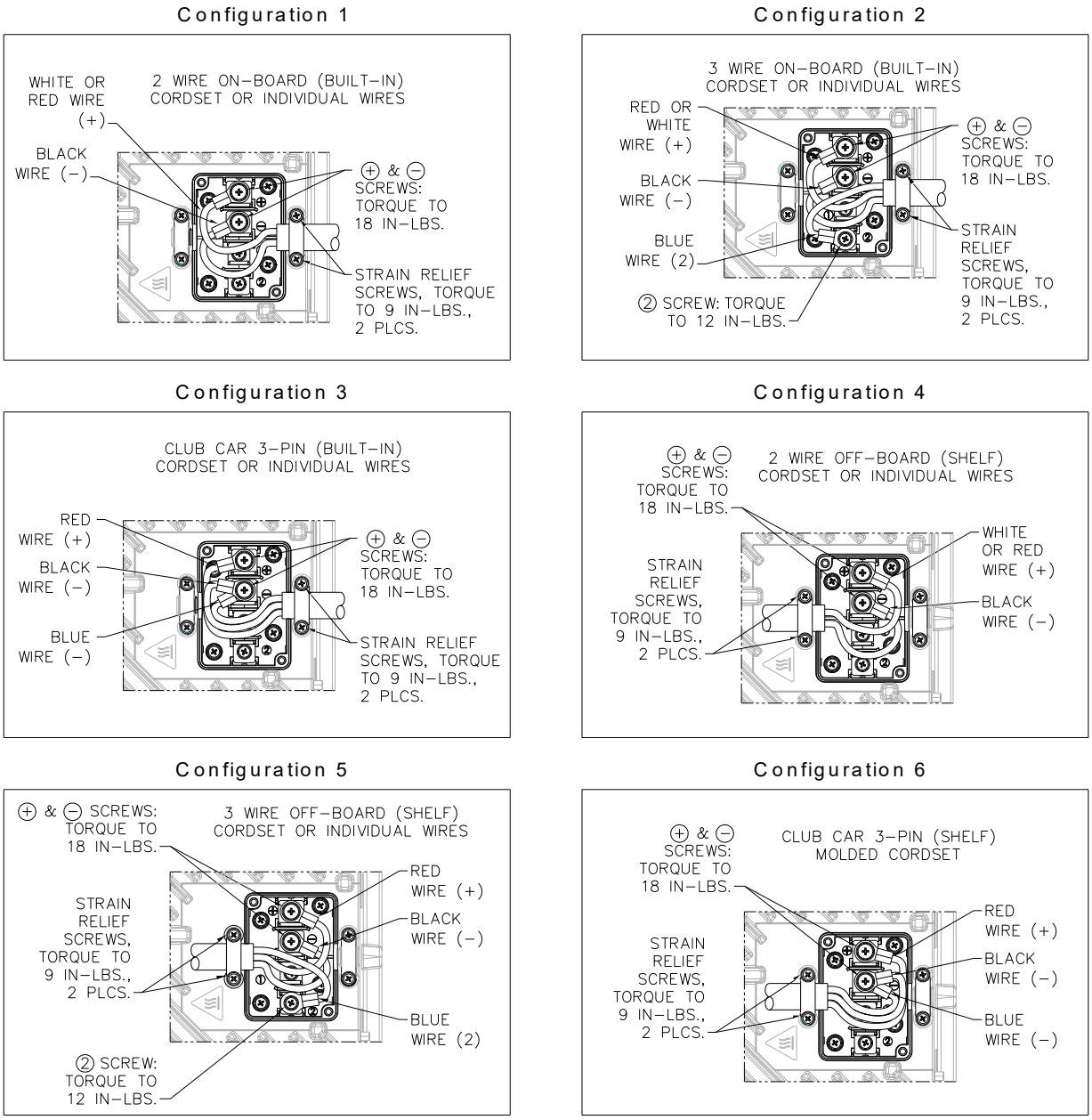



***Figure 6.2-2: Common DC Terminal Block Configurations***

## 7. VEHICLE LOCKOUT CONTROL

The charger lockout/interlock control signal can be interfaced with the vehicle/equipment to prevent use/movement of the vehicle while the charger is in use. Depending on your model (see Table 6.2-2), the lockout control is available on Terminal 2 of the DC terminal block (see Figure 6.2-1).

The charger's single-wire lockout control is typically interfaced to the vehicle motor speed controller. The lockout signal can be configured to be pulled high to battery positive (+) or low to battery negative (-) when the lockout is active using the "System Profile", which can be changed using the ChargerConnect app (see Section 8). If you are uncertain of how to attach the lockout wiring, please contact your dealer.

If the charger is configured for on-board use, the lockout control will be active while AC power is applied to the charger. If the charger is configured for off-board use, the lockout control will be active while a valid battery is connected to the charger. Based on your application, you can configure the charger as on-board or off-board via the ChargerConnect app under “System Profile” (see Section 8).

# 8. BLUETOOTH® WIRELESS

The charger features Bluetooth wireless communication, which can be accessed using an Apple® or Android™ smart phone, tablet, or similar device. Download the ChargerConnect app for your device by scanning the QR code on the charger or visiting the App Store® or the Google Play™ store and searching for "ChargerConnect".

**The charger communication electronics are DC powered, so the charger must be connected to a valid battery pack in order to communicate with it via Bluetooth.** If the charger is connected to a valid battery pack, open the ChargerConnect app and select the charger from the list of available units the app is able to communicate with. The charger serial number is the identifier of the unit, unless the "Charger ID" has been previously changed via the app. While connected, the Red, Yellow, and Green LEDs on the charger will slowly blink at the same time until the Bluetooth communication is disconnected from the charger.

The following is a list of functionality available via the ChargerConnect app:

- "Dashboard" display of charging status
  - Charger ID, Vehicle ID, Battery Profile
  - LED Status, Charge Status, AC Present, Faults
  - Charge Time Remaining, Output Current, Amp-Hours Returned, Battery Voltage, Battery State of Charge (SOC)
  - Auto Battery Voltage Detection Status (if enabled)
  - Detected Battery Pack Voltage (if enabled)
  - Manual Stop/Start of a Charge Cycle
  - Manual Initiation of an Equalize/Balance Cycle
- "Diagnostics" display of real-time data
  - Ammeter for output current
  - Voltmeter for battery voltage
  - Battery State of Charge (SOC), Charge Time Remaining, Charge Cycle Phase, Amp-Hours Returned, Faults, AC Input Voltage, Battery Temperature (if a sensor is present)
- "History" of charge cycle data
  - "Charger Histories" tab
    - Overview:
      - Charger: Total Charge Cycles, Total Amp-Hours
      - Device: Total Charge Cycles, Last Charge Cycle
      - Cloud: Total Charge Cycles, Last Charge Cycle
    - Get 10 Records button
    - Get All Records button
    - Delete All Records button
    - Records section where individual records that have been downloaded from the charger can be selected to view the charge cycle details
  - "Cloud Histories" tab where all records from the "Charger Histories" tab can be uploaded to the Cloud for access via ChargerConnect.com using the charger serial number
- "System Information" (display only)
  - Serial Number, Model Number, Charge Control Firmware Version, Power Control Firmware Version, Hardware Version
  - Vehicle ID, Battery Information
- "System Profile"
  - "Charger Profiles" tab (all items are settable)
    - Charger ID, Vehicle ID, DC Cable Gauge (AWG), DC Cable Length (feet), On Board check box (checked = on-board, unchecked = off-board), Lockout (Disabled, Active Low, or Active High)
    - Auto Voltage Profile (see Section 6.1)
  - "Device Profiles" tab enables System Profiles that reside on the smart phone or tablet (device) to be uploaded to the charger
  - "Cloud Profiles" tab enables System Profiles to be downloaded from the Cloud to the smart phone or tablet (device)
- "Battery Profiles"
  - "Charger Profiles" tab
    - Set the "Active Battery Profile" via the check mark
    - Question mark buttons provide detailed descriptions of the battery profiles
  - "Device Profiles" tab enables Battery Profiles that reside on the smart phone or tablet (device) to be uploaded to the charger
  - "Cloud Profiles" tab enables Battery Profiles to be downloaded from the Cloud to the smart phone or tablet (device)
  - "Battery Profile Selector" tab
    - Identify correct battery profile based on battery type, voltage and size
- "Help" provides more in-depth information regarding the ChargerConnect app

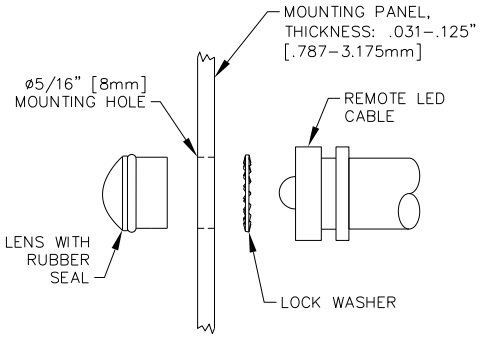
**⚠CAUTION: CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC and ICES-003 Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. The Bluetooth wireless module operates at a frequency range of 2402.0 - 2480.0 Mhz and has an output wattage of 0.008.

## 9. EXTERNAL PORT

The charger has an external port with a DB9 (DE9) connector (sealed internally) located on the DC terminal block end of the unit which is used for an optional remote LED, CANbus communication cable assembly, or other OEM specific cable assembly. When this port is not used, leave the protective cover over the connector to keep moisture and debris out of the connector. For harsh environments, add dielectric grease to the DB9 port before attaching mating connector.

When mounting the charger on-board a vehicle where the charger LEDs are not visible, an optional remote LED cable assembly can be used. Attach the remote LED cable assembly to the external port on the charger and hand tighten the connector mounting screws. The LED end of the cable assembly is to be rear mounted through a hole on the vehicle or it can be attached to a panel which mounts to the vehicle. Install the remote LED assembly as shown and attach the accompanying decal. Remote LED blink patterns are detailed in Section 12.3.




## 10. PROPER CARE OF DEEP-CYCLE LEAD-ACID MOTIVE POWER BATTERIES

Motive power battery packs are subjected to severe deep-cycle duty on a daily basis. Although these batteries are designed to withstand such duty, the following precautions must be observed to obtain good performance and maximum cycle life.

**⚠CAUTION: ALWAYS WEAR PROTECTIVE EYE SHIELDS AND CLOTHING WHEN WORKING WITH BATTERIES. BATTERIES CONTAIN ACIDS WHICH CAN CAUSE BODILY HARM. DO NOT PUT WRENCHES OR OTHER METAL OBJECTS ACROSS THE BATTERY TERMINAL OR BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY CAN RESULT.**

1. When installing new batteries, be sure the polarity of each battery and the overall battery pack is correct. Otherwise, battery and/or charger damage can result.
2. New batteries should be given a full charge before their first use because it is difficult to know how long the batteries have been stored.
3. New batteries and older batteries that have been in storage are not capable of their rated output until they have been discharged and charged a number of times. Consult the manufacturer of your batteries for more information.
4. DO NOT EXCESSIVELY DISCHARGE THE BATTERIES. Excessive discharge can cause polarity reversal of individual cells resulting in complete failure shortly thereafter.

5. Maintain the proper electrolyte level of wet (flooded) batteries by adding water when necessary. Distilled or deionized water is best for battery life. Never allow the electrolyte level to fall below the top of the battery plates. Electrolyte levels lower during discharge and rise during charge. Therefore, to prevent the overflow of electrolyte when charging, it is mandatory that water be added to cells AFTER they have been fully charged – do not overfill. Old batteries require more frequent additions of water than new batteries.
6. Hard crystalline sulfates form when batteries in storage are not maintained in a charged active state. Internal self discharge can bring about the start of this condition in as little as three days in warm temperatures. Batteries not maintained and allowed to sit in storage will self discharge, sulfate and lose capacity. Repeated charging without using the batteries between charges can recover some of the lost power, range, and life, but some permanent loss should be expected.
7. Cold batteries require more time to fully charge. When the temperature falls below 65°F, the batteries should be placed on charge as soon after use as possible.
8. The tops of batteries and battery hold downs must be kept clean and dry at all times to prevent excessive self discharge and the flow of current between the battery posts and frame. Electrolyte spilled on batteries never dries or evaporates.
9. All connections to batteries must be maintained clean and tight. Due to heating and discharge rates, bolted connections loosen over time. Re-tighten the connections twice yearly to the torques specified by the battery manufacturers.
10. Follow all operating instructions, cautions, and warnings as specified in this manual, on the charger, in the battery manuals, and in the vehicle manuals.

### 10.1 Personal Safety Precautions

1. Have someone within the range of your voice and close enough to quickly come to your aid when you work near a lead-acid battery.
2. Ensure ample fresh water and soap are nearby in case battery acid contacts your skin, clothing, or eyes.
3. Wear complete eye and clothing protection. Avoid touching your eyes while working near a battery.
4. If battery acid contacts your skin or clothing, wash immediately with soap and water. If acid enters your eye, immediately flush your eye with running cold water for at least 10 minutes, and get medical attention immediately.
5. NEVER smoke or allow a spark or flame to be in the vicinity of a battery.
6. Be extra cautious to reduce the risk of dropping a metal tool onto a battery. It could spark or short circuit the battery or other electrical components that could cause an explosion.
7. Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a battery. A battery can produce a short-circuit current that is high enough to cause a severe burn.
8. NEVER charge a frozen battery.

## 11. CHARGER OPERATION

**⚠WARNING: TO REDUCE THE RISK OF AN ELECTRIC SHOCK, CONNECT ONLY TO A SINGLE-PHASE, PROPERLY GROUNDED (3-WIRE) OUTLET. REFER TO GROUNDING INSTRUCTIONS.**

**⚠CAUTION: MAKE SURE THE BATTERY IS A RECHARGEABLE DEEP-CYCLE BATTERY WITH THE PROPER RATED VOLTAGE FOR THIS CHARGER.**

**⚠DANGER: TO PREVENT ELECTRICAL SHOCK, DO NOT TOUCH UNINSULATED PARTS OF THE CHARGER DC OUTPUT CONNECTOR, BATTERY CONNECTOR, OR BATTERY TERMINALS. MAKE SURE ALL ELECTRICAL CONNECTORS ARE IN GOOD WORKING CONDITION. DO NOT USE CONNECTORS THAT ARE CRACKED, CORRODED, OR DO NOT MAKE ADEQUATE ELECTRICAL CONTACT. USE OF A DAMAGED OR DEFECTIVE CONNECTOR MAY RESULT IN A RISK OF OVERHEATING OR ELECTRIC SHOCK.**

**⚠WARNING: CHARGER IS NOT TO BE USED WHILE THE BATTERY POWERED EQUIPMENT IS OPERATING.**

**⚠ATTENTION: NE PAS UTILISER LE CHARGER PENDANT QUE L'EQUIPMENT EST EN MARCHE.**

**⚠WARNING: LEAD-ACID BATTERIES GENERATE GASES WHICH CAN BE EXPLOSIVE. TO PREVENT ARCING OR BURNING NEAR BATTERIES, DO NOT DISCONNECT THE CHARGER DC OUTPUT FROM THE BATTERIES WHEN THE CHARGER IS OPERATING. KEEP SPARKS, FLAME, AND SMOKING MATERIALS AWAY FROM BATTERIES.**

**⚠WARNING: ALWAYS SHIELD EYES WHEN WORKING NEAR BATTERIES. DO NOT PUT WRENCHES OR OTHER METAL OBJECTS ACROSS BATTERY TERMINALS OR THE BATTERY TOP. ARCING OR EXPLOSION OF THE BATTERY CAN RESULT!**

**⚠WARNING: DO NOT DISCONNECT THE CHARGER DC OUTPUT CONNECTOR FROM THE BATTERY CONNECTOR WHILE A CHARGE CYCLE IS IN PROGRESS. THE RESULTING ARCING AND BURNING OF THE CONNECTORS COULD CAUSE THE BATTERIES TO EXPLODE.**

**⚠CAUTION: TO AVOID DAMAGE TO THE CHARGER DC CABLE AND CONNECTOR AND BATTERY CONNECTOR, DISCONNECT BY GRASPING THE CHARGER CONNECTOR HANDLE OR BODY AND PULLING IT STRAIGHT OUT OF THE BATTERY CONNECTOR. DO NOT PULL ON THE CHARGER CABLE. DO NOT TWIST, ROCK, OR PULL THE CONNECTOR SIDEWAYS.**

**The instructions printed on the charger are for daily reference.**

## 11.1 Off-Board Charger Operation

If the charger was configured for off-board use, follow these operating instructions:

1. With the charger DC output connector/plug disconnected from the battery connector/receptacle, connect the charger AC power cord to an appropriate AC outlet (if not already connected) and the blue "AC PRESENT" LED will turn on.

2. Connect the charger DC output connector/plug to the battery connector/receptacle. The charger will start automatically, which is indicated by the yellow "CHARGE STATUS" LED beginning to blink slowly.

3. If the charger must be disconnected from the battery while a charge cycle is in progress, first disconnect the AC power cord from the AC outlet. Do not disconnect the charger DC output connector/plug from the battery while a charge cycle is in progress.

4. The charge cycle 80% point is indicated by the yellow LED beginning to blink quickly.

5. The Finish charge cycle phase is indicated by the solid illumination of the yellow LED. Not all charge profiles include a Finish phase.

6. An extended Balance/Equalize charge cycle phase is indicated by the green "CHARGE COMPLETE" LED beginning to blink quickly. Not all charge profiles include a Balance/Equalize phase.

7. The charger automatically terminates the charge cycle when a battery reaches full charge, which is indicated by [1] the solid illumination of the green LED or [2] the green LED beginning to blink slowly indicating a post-charge phase. The required charge time is affected by numerous factors, including battery amp-hour capacity, depth of discharge, battery temperature, and battery age/usage.

8. Before operating the machine/equipment, disconnect the charger DC output connector/plug from the battery connector/receptacle by firmly grasping both connectors and pulling them straight apart.

## 11.2 On-Board Charger Operation

If the charger was configured for on-board use, follow these operating instructions:

1. Ensure that the vehicle/equipment that the charger is mounted on is turned off.

2. With the charger AC power cord disconnected from the AC outlet, connect the charger DC output connector/plug to the battery connector/receptacle (most likely already connected or hard wired).

3. Connect the charger AC power cord to an appropriate live AC outlet which is indicated by the blue "AC PRESENT" LED turning on. The charger will start automatically as indicated by the yellow "CHARGE STATUS" LED beginning to blink slowly.

4. If the charger must be disconnected from the battery while a charge cycle is in progress, disconnect the AC power cord from the AC outlet. Do not disconnect the charger DC output connector/plug from the battery while a charge cycle is in progress.

5. The charge cycle 80% point is indicated by the yellow LED beginning to blink quickly.

6. The Finish charge cycle phase is indicated by the solid illumination of the yellow LED. Not all charge profiles include a Finish phase.

7. An extended Balance/Equalize charge cycle phase is indicated by the green "CHARGE COMPLETE" LED beginning to blink quickly. Not all charge profiles include a Balance/Equalize phase.

8. The charger automatically terminates the charge cycle when a battery reaches full charge, which is indicated by [1] the solid illumination of the green LED or [2] the green LED beginning to blink slowly indicating a post-charge phase. The required charge time is affected by numerous factors, including battery amp-hour capacity, depth of discharge, battery temperature, and battery age/usage.

9. Before operating the vehicle/equipment, disconnect the charger AC power cord from the outlet.

## 11.3 Storage Mode Operation

1. Storage Mode is designed to keep your battery maintained during storage periods that last a few weeks to several months at a time.

2. Depending on the battery type, the battery profile, and system profile selected, a storage charge can be a continuous float or a periodic charge mode.

3. Do NOT disconnect the charger from the battery or from the AC power until your machine is needed for use. Disconnecting and reconnecting the charger from the batteries or AC power may start a charge cycle, but disconnection disrupts the storage mode so optimum battery maintenance is not achieved.

4. After several months of storage your batteries should be serviced and the charger reset by disconnecting the DC for Off-Board or the AC for On-Board applications (disconnect AC for a minimum of 10 minutes) before continuing another storage season.

## 12. LED INDICATORS

The charger has four (4) LEDs to indicate charger status and fault information. The functionality of the LEDs is outlined below and explained in the table below.

### 12.1 Charger LED Status

The functionality of the LEDs is outlined below and in the following table.

- **AC PRESENT (Blue) -** Indicates charger is connected to a live AC inlet.
- **FAULT (Red) -** Indicates when a charger or battery fault has occurred (see section 12.2 for more information).
- **CHARGE STATUS (Yellow) -** Indicates charge cycle status.
- **CHARGE COMPLETE (Green) -** Indicates when a charge cycle completes successfully, when an extended Balance/Equalize charge cycle phase is active, or when a post-charge phase is active.

| FAULT (Red) LED | CHARGE STATUS (Yellow) LED | CHARGE COMPLETE (Green) LED | DESCRIPTION |
|---|---|---|---|
| Solid On | Solid On | Solid On | LED check for a few seconds during charger initialization |
| | Slow Blink | Off | Bulk/Start charge cycle phase (constant power or constant current). |
| | Fast Blink | Off | Absorption/Plateau charge cycle phase (constant voltage). Greater than 80% charged. |
| | Solid On | Off | Finish charge cycle phase (constant current). Not all charge profiles include a Finish phase. |
| | Off | Fast Blink | Balance/Equalize phase. An extended charge cycle is occurring because a trigger condition has been met (cycle count, etc). Not all charge profiles include a Balance/Equalize phase. |
| | Off | Solid On | Charge cycle complete. |
| | Off | Slow Blink | Charge cycle complete. Post Charge phase (constant voltage float, etc). Not all charge profiles include a Post Charge phase. |
| Slow Blink | Slow Blink | Slow Blink | Charger Bluetooth connected to a smart phone or device, LEDs blink at the same time |

## 12.2 Charger LED Faults

The charger will indicate when a fault occurs by using different patterns of the Fault (Red), Charge Status (Yellow), and Charge Complete (Green) LEDs as explained in the table below. Using the ChargerConnect App, check the diagnostic tab to get a description of the charger fault.

| | FAULT (Red) LED | CHARGE STATUS (Yellow) LED | CHARGE COMPLETE (Green) LED | DESCRIPTION |
|---|---|---|---|---|
| Charger | Slow Blink | Solid On | Solid On | DC DISCONNECT – DC disconnect detected via the third-pin, but DC (battery) voltage is still present at the charger output. |
| | Slow Blink | Off | Solid On | OVER TEMP – Maximum temperature was met. Charge cycle was halted and will restart when the temperature decreases. |
| | Slow Blink | Fast Blink | Slow Blink | LOW TEMP – Temperature is too low to start a charge cycle (< -25°C). Charging will start when temperature increases. |
| | Slow Blink | Solid On | Off | LOW DC – DC (battery) voltage is too low to start charging (< 10V). |
| | Slow Blink | Off | Off | NO AC – AC power was lost during charging. Charge cycle was halted and will restart when AC power returns. |
| | Slow Blink | Solid On | Slow Blink | HARDWARE FAULT – Contact Lester Electrical. |
| | Slow Blink | Slow Blink | Off | HARDWARE FAULT – Contact Lester Electrical. |
| | Slow Blink | Slow Blink | Slow Blink | COMM FAULT – LEDs blink one at a time in a rotating pattern. Contact Lester Electrical. Unit is still able to charge. |
| | Slow Blink | Slow Blink | Solid On | HARDWARE FAULT – Contact Lester Electrical. |
| | Fast Blink | N/A | N/A | HARDWARE FAULT – Contact Lester Electrical. Unit is still able to charge. |
| Battery | Solid On | Off | Off | PHASE – A fault condition (most commonly maximum time) was met during a particular charge phase (start/bulk, plateau/absorption, finish, etc). |
| | Solid On | Off | Slow Blink | MAX VOLTAGE – Maximum voltage was met. |
| | Solid On | Off | Solid On | MIN VOLTAGE – Minimum voltage was NOT met after a specified time from the start of the charge. |
| | Solid On | Slow Blink | Off | MAX AMP-HOURS – Maximum amp-hours for the overall charge cycle was met. |
| | Solid On | Slow Blink | Slow Blink | MAX TIME – Maximum time for the overall charge cycle was met. |
| | Solid On | Solid On | Fast Blink | BATTERY TEMP – Battery temperature is outside of its specified range |

N/A = Not applicable, LED state does not matter

Disconnecting the charger from the battery always clears a fault. If the charger was factory-configured for on-board use, removing AC power from the charger also clears a fault. If a fault cannot be cleared after taking appropriate corrective action, contact your dealer for troubleshooting and/or service.

## 12.3 Remote LED Status and Faults

When an optional bi-color remote LED cable is attached to the external port, the LED functionality is slightly different from the built-in LEDs and is outlined below and in the following table.

- **FAULT (Red) -** Indicates when a charger or battery fault has occurred. See ChargerConnect App for fault description.
- **CHARGE STATUS (Amber) -** Indicates charge cycle status.
- **CHARGE COMPLETE (Green) -** Indicates when a charge cycle completes successfully, when an extended Balance/Equalize charge cycle phase is active, or when a post-charge phase is active.

| FAULT (Red) LED | CHARGE STATUS (Amber) LED | CHARGE COMPLETE (Green) LED | Description |
|---|---|---|---|
| | Solid On | | LED check for a few seconds during charger initialization, Solid On and then Off |
| | Slow Blink | | Bulk/Start charge cycle phase (constant power or constant current). |
| | Fast Blink | | Absorption/Plateau charge cycle phase (constant voltage). Greater than 80% charged. |
| | Solid On | | Finish charge cycle phase (constant current). Not all charge profiles include a Finish phase. |
| | | Fast Blink | Balance/Equalize phase. An extended charge cycle is occurring because a trigger condition has been met (cycle count, etc). Not all charge profiles include a Balance/Equalize phase. |
| | | Solid On | Charge cycle complete. |
| | | Slow Blink | Charge cycle complete. Post Charge phase (constant voltage float, etc). Not all charge profiles include a Post Charge phase. |
| Solid On | | | Charge has recognized a fault condition. See ChargerConnect app for fault description. |

## 13. TROUBLESHOOTING

The charger was fully tested and calibrated before leaving the factory. It was delivered ready to charge. If properly installed, the charger should require very little attention. If improper charger operation occurs, it will require repair by a qualified service technician (see section 12.1 for information regarding the Fault LED).

**⚠CAUTION: DO NOT OPERATE THE CHARGER IF IT IS DAMAGED OR APPEARS TO BE MALFUNCTIONING. PERSONAL INJURY OR DAMAGE TO THE CHARGER OR BATTERIES MAY RESULT. DO NOT DISASSEMBLE THE CHARGER. CONTACT YOUR DEALER. INCORRECT REASSEMBLY MAY RESULT IN RISK OF ELECTRIC SHOCK OR FIRE.**

1. If the charger does not turn on, check for one of the following conditions.
   a. The charger AC power cord is not plugged into a live and/or appropriate AC outlet.
   b. The battery connections are incorrect – battery not connected, reverse polarity, or short circuit.
   c. The battery voltage is too high.
   d. The battery voltage is too low (below 10 volts).

2. If the charger turns off before a battery is fully charged, and a fault condition is not indicated by the Fault LED, this indicates one of the following conditions.
   a. The AC power was interrupted during the charge cycle.
   b. The charger DC output connector was disconnected from the battery during the charge cycle.
   c. The battery has been allowed to sulfate. Charge the battery at least once every three (3) days when the equipment is lightly used. Once sulfation is allowed to take place, it may be partially reduced by returning, temporarily, to daily charging.

3. A decrease in vehicle/equipment range where the battery loses power faster indicates one of the following conditions.
   a. The electrolyte level in a wet lead-acid battery was allowed to drop below the top of the battery plates. If so, add distilled water to just cover the top of the plates immediately upon discovery, and then fill to the proper level with distilled water at the completion of the very next charge cycle.
   b. Use of the vehicle/equipment before the battery has been fully charged and the charger automatically terminates the charge cycle. This shortens battery life and accelerates the onset of reduced daily range.
   c. The normal wear-out pattern for the battery.

4. A charge cycle running longer than anticipated before terminating indicates one of the following conditions.
   a. An overly-discharged battery.
   b. The charger output may have been reduced due to low AC input voltage, high ambient temperature, or obstructions to cooling airflow.
   c. The amp-hour capacity of the battery is greater than the charger can fully charge in the anticipated amount of time.

## 14. SPECIFICATIONS

See the 1050W Summit II datasheet for specifications.

## 15. SERVICE PART LIST

**All models: 48V Model 28750 & 28760, 36V Model 29410 & 29420, 24-48V Model 30410 & 30420**

| Description | Lester Part Number |
|---|---|
| Handle Kit (handle with screws) | 42117S |
| DC Terminal Block Cover Kit (cover with screws) | 43151S |
| 2 Wire, 2-12AWG, 3ft, DC Cordset with Ring Terminals | 41876S |
| 2 Wire, 2-12AWG, 6ft, DC Cordset with Ring Terminals | 41877S |
| 2 Wire, 12AWG, 9ft, DC Cordset with SB50 Gray Plug | 41881S |
| 2 Wire, 12AWG, 9ft, DC Cordset with SB50 Red Plug | 41882S |
| 2 Wire, 12AWG, 9ft, DC Cordset with SB175 Gray Plug | 41883S |
| 2 Wire, 12AWG, 9ft, DC Cordset with SB175 Red Plug | 41884S |
| 2 Wire, 12AWG, 9ft, DC Cordset with Lester 2-blade Gray Molded Plug | 41891S |
| 3 Wire, 2-12AWG, 1-16AWG, 3ft, DC Cordset with Ring Terminals (LO) | 41878S |
| 3 Wire, 2-12AWG, 1-16AWG, 6ft, DC Cordset with Ring Terminals (LO) | 41879S |

**48V Model 28750, 28760 and 24-48V Model 30410, 30420**

| Description | Lester Part Number |
|---|---|
| 3 Wire, 12AWG, 9ft, DC Cordset with 48V CCI Gray Molded Plug | 41892S |
| 3 Wire, 12AWG, 12ft, DC Cordset with 48V CCI Gray Molded Plug | 41893S |
| 2 Wire, 12AWG, 9ft, DC Cordset with 48V E-Z-GO Powerwise Plug | 42457S |
| 2 Wire, 12AWG, 12ft, DC Cordset with 48V E-Z-GO Powerwise Plug | 42458S |

**36V Model 29410, 29420 and 24-48V Model 30410, 30420**

| Description | Lester Part Number |
|---|---|
| 2 Wire, 12AWG, 9ft, DC Cordset with 36V E-Z-GO Powerwise Plug | 41887S |
| 2 Wire, 12AWG, 12ft, DC Cordset with 36V E-Z-GO Powerwise Plug | 41888S |

LO = Lockout

Represented By:


43068 B