

# **BSLBATT**<sup>®</sup>

*Best Solution Lithium Battery*

## INSTALLATION MANUAL

### 5.2KWH LITHIUM-ION GOLF CART BATTERY



# SAFETY GUIDELINES

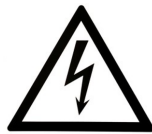


Work or maintenance on the BSL battery should be carried out by qualified personnel only.

Do not attempt to open or dismantle battery and/or cells.



The electrolyte contained in the battery cells is highly corrosive. In the event of any damage to or leakage from the cells, treat contents with care, do not allow contact with exposed skin or eyes. **DO NOT INGEST.**



The terminals of the BSL battery should always be considered live, therefore do not place tools or any other items across the terminals. Do not pierce, short or damage the terminals or battery in any way. Do not touch the terminals of the battery. **DO NOT SUBMERGE.**



**Fire Hazard:** Do not discharge battery below specified minimum level as this poses an increased fire risk. Do not attempt to charge a swollen or damaged battery. In the event of fire, a  $CO_2$  or Dry Powder extinguisher should be used. Class D extinguishers are not suitable.



Dispose of batteries through the proper local regulations. Not suitable for regular refuse/recycling.

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# 1 Battery pin out diagram

## 1.1 Top view of battery



Figure 1: Pin-out diagram for top view of golf cart battery.

- A - +P terminal which is connected to the + C terminal of the battery. Used to charge or discharge the battery.
- B - Mounting terminals which allow for easy mounting of the battery.
- C - -P terminal which is connected to the - C terminal of the battery. Used to charge or discharge the battery.
- D - + Charge terminal. This terminal is connected to the +P terminal. Used to charge or discharge the battery.
- E - ON-OFF switch allowing power in and out of battery.
- F - - Charge terminal. This terminal is connected to the -P terminal. Used to charge or discharge the battery.
- G - Mounting terminals which allow for easy mounting of the battery.

## 1.2 Side view of battery

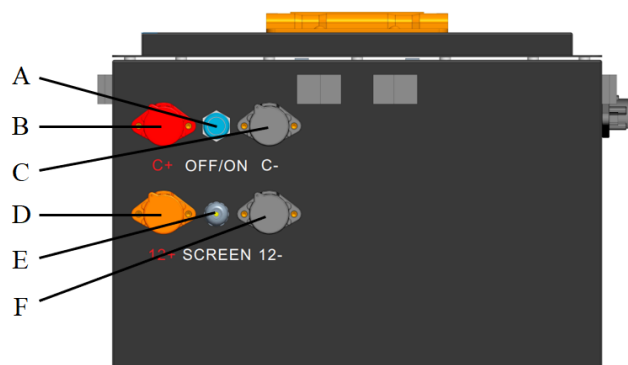


Figure 2: Pin-out diagram for side view of golf cart battery.

- A - ON-OFF switch allowing power in and out of battery.
- B - + Charge terminal. This terminal is connected to the +P terminal. Used to charge or discharge the battery.
- C - - Charge terminal. This terminal is connected to the -P terminal. Used to charge or discharge the battery.
- D - + 12V terminal. This terminal is connected to a 150W 12V power supply built into the battery.
- E - Cable which is connected to the screen.
- F - - 12V terminal. This terminal is connected to a 150W 12V power supply built into the battery.

## 2 Charger pin out diagram

### 2.1 Front view of charger

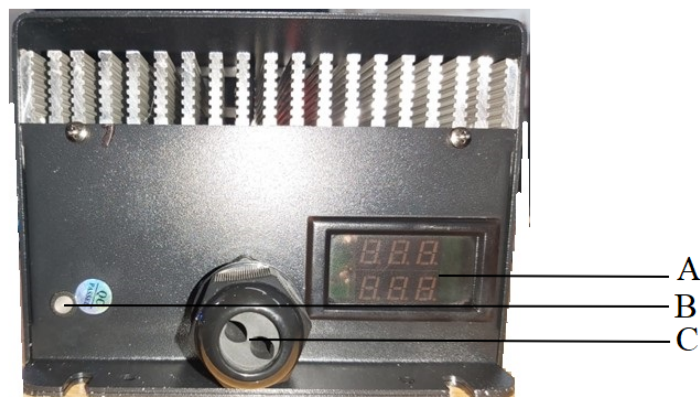


Figure 3: Front view of charger.

- A - Screen indicating the charge amps as well as the voltage of the battery.
- B - Light indicating if the battery is charged or busy charging.
- C - IP rated connection to hold cables going into charger.

### 2.2 Inside charger

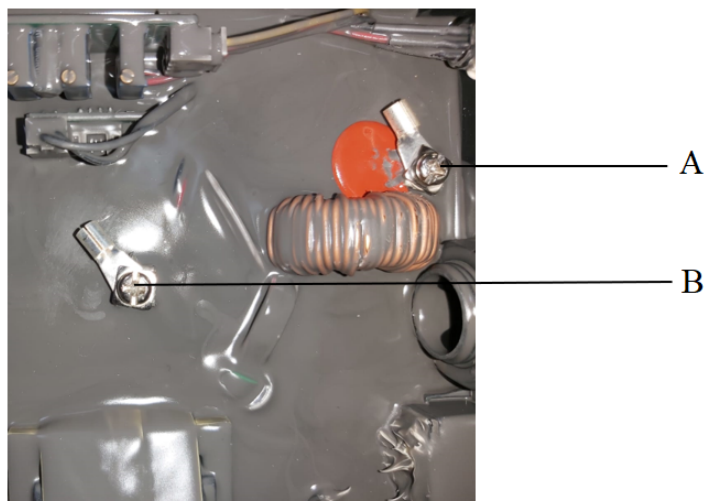
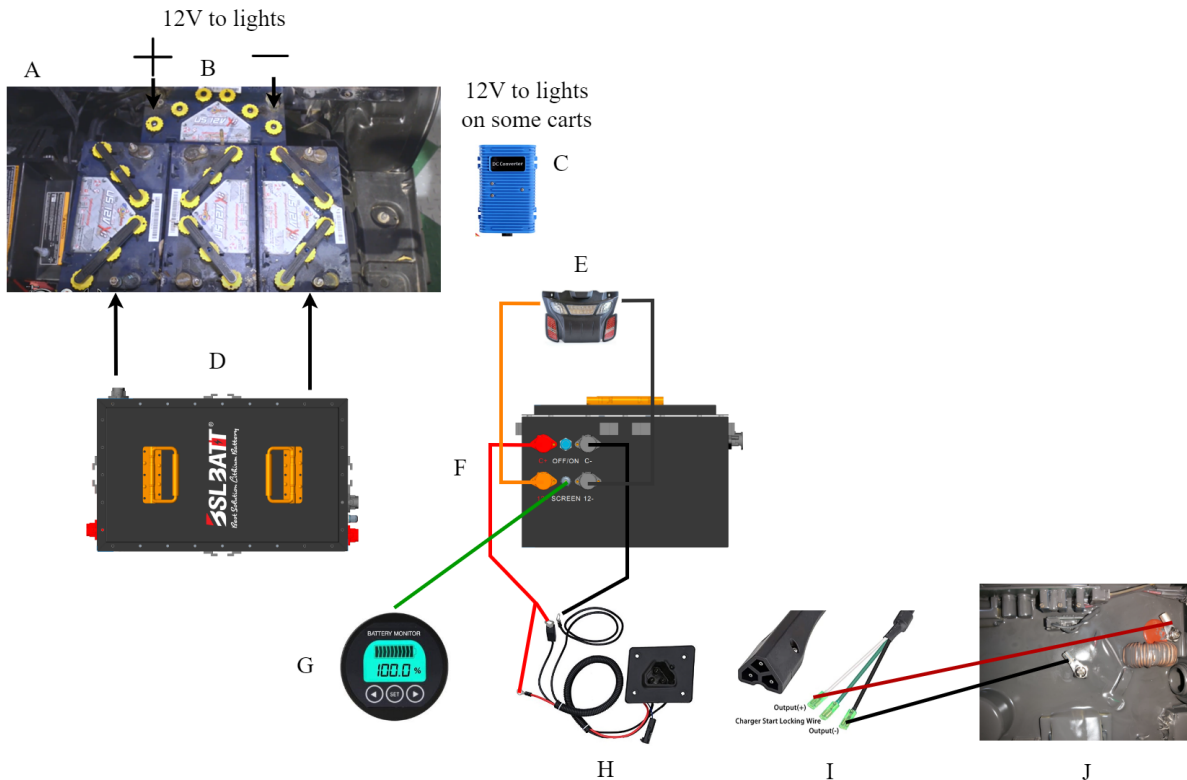


Figure 4: Inside view of charger.

- A - Positive terminal of battery charger. One must connect the positive, original charger to this terminal. (More explained in Section 3).
- B - Negative terminal of battery charger. One must connect the positive, original charger to this terminal. (More explained in Section 3).

### 3 Installation procedure



- A - The bay in which the battery is situated.
- B - This is the battery from which the lights draw their 12V supply.
- C - The cart may contain a similar 12V supply, it is normally situated in the bay where the charger reciprocal is located within the cart (on the right side of the battery).
- D - This is how the battery should be mounted, it can however be rotated. This may make the installation slightly more complex.
- E - The lights of an EZGO are normally connected to some kind of 12V supply. This is not the case with all carts.
- F - The cables which need to be connected to the inner working of the cart can be found here, there is no continuity between the 12V and the 48V terminals and one should not attempt to join them.
- G - The screen is supplied with a 5m long cable which can reach the dashboard of the cart.
- H - The reciprocal inside the cart must be connected to the battery charge ports.
- I - The original chargers cable must be connected to the charger (inside at the bottom).
- J - The terminals of the charger are distinguishable with the use of red to denote positive and the blank terminal to denote negative.

## 3.1 Installation steps

### 3.1.1 Step 1

1. Make sure you have considered all possible risks involved with the installation of a lithium battery (including those not listed in this document) and take the appropriate action to mitigate such risks .
2. Make sure the battery is off.
3. Remove the original batteries from the golf cart.
4. Make sure it is noted where each cable is connected before removing them.
5. Place the new battery in the cradle.
6. Mark where the holes for the mountings should be made. All 4 mountings should be used to securely fasten the battery.
7. Remove the new battery and drill holes for the new mountings.

### 3.1.2 Step 2

1. Check where the 12V supply for the lights is connected. In some EZGO carts, they are connected straight to one of the 12V batteries. If this is not the case, the lights may also be connected to a 12V supply.
2. In the case where the 12V is connected to a single battery, one can connect the positive and negative terminals to the 12V terminals of the new battery. This will allow the lights to receive power.
3. If there is already a 12V supply connected to the cart, it is not necessary to remove it. One can simply connected the cables which are supplying the 12V from the original battery to the new battery terminals.
4. It should be noted that not all brands of carts need a 12V to supply the lights on the cart.

### 3.1.3 Step 3

1. The charging cord must be checked in order to determine where the positive and negative terminals are.
2. Do not remove the reciprocal on the other end of the charger cord (this is the end that plugs into the cart).
3. The charger must have its cord removed (the one going from the charger to the cart). It should be checked that this original cord can supply over 15A. If not, the new charger will burn the cord which will cause issues.
4. Once the original battery cord has been removed it must then be connected to the new charger terminals (this is inside the bottom of the charger).



5. The red and black within the charger denotes the positive and negative terminals respectively.
6. **The charger does not come with a plug as some clients require dedicated plugs and others do not.**



#### 3.1.4 Step 4

1. On the inside of the golf cart, the positive and negative terminals of the reciprocal must be connected to either the P+ and P- terminals or the C+ and C- terminals. These terminals are connected within the battery and thus if one testes continuity over P+ and C+ for example, they will find them continuous.
2. It must be check that one as made the correct connections between the battery and the reciprocal inside the golf cart. If the terminals are inverted the battery and the charger will be damaged and the warranty will be voided.
3. The positive and negative 48V connections to the rest of the golf cart must then be made (usually between the controller and the battery).

#### 3.1.5 Step 5

1. The long cable which accompanies the screen must be connected in order to determine if the battery is charging or discharging.
2. The battery should then be allowed to fully charge (i.e. there are no more amps going into the battery from the charger, this can be viewed on the charger screen).
3. Once there are no more amps going into the battery, the battery is full and the screen needs to be calibrated.
4. The screen is calibrated by holding in the set button and then increasing the % of the battery to 100%.

## 4 Revision history

Version	Date	Editor	Changes
1	Nov 2022	D. E. Cornew	-

Table 1: Version changes