

12.8V 50AH OWNER'S MANUAL

NEWPORT®

**NEWPORT
BLUETOOTH**
LITHIUM BATTERY

12.8V 50AH



THE WAY FORWARD IS **ELECTRIC**





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The leading innovator of next-generation electric small boat motors, Newport®, has delivered unrivaled experiences on the water for more than a decade.

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ⓘ **CAUTION:** Risk of Fire, Explosion or Burns, **DO NOT** Short Circuit, **DO NOT** Reverse connections from the charger to the battery, **DO NOT** Disassemble, **DO NOT** Throw into fire or incinerate, **DO NOT** Heat above 70°C/158°F

⚠ **WARNING:** Battery Disposal - The electrodes of the waste battery should be wrapped with insulating paper to prevent fire and explosion.

⚠ **WARNING:** Prohibition of Disassembly - Never disassemble the cells. The disassembling may generate an internal short circuit in the cell, which may cause gassing, fire, explosion, or other problems. The electrolyte is harmful. Li-Fe battery should not have liquid from electrolyte flowing, but in case the electrolyte comes into contact with the skin, or eyes, physicians shall flush the electrolyte immediately with the fresh water and medical advice is to be sought. If any abnormal features of the cells are found such as damages in a plastic envelope of the cell, deformation of the cell packaging, smell of an electrolyte leakage and others, the cells shall not be used. The cells with a smell of electrolyte leakage shall be placed away from the heat to avoid fire or explosion.

⚠ **WARNING:** Prohibition of Dumping of Cells into Water - Do not soak the battery in liquid, like water, seawater and non-alcoholic drinks, fruit juice, coffee or other drinks.

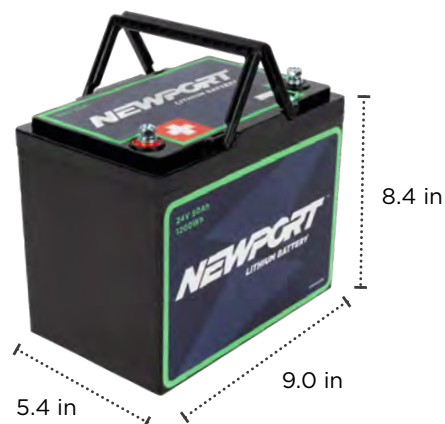
⚠ **WARNING:** Prohibit use in Following Places - DO NOT use the battery in a place with a strong static electricity or strong magnetic field, otherwise, it may damage the battery safety protection device.



Please read and retain this manual before using product



1 PRODUCT OVERVIEW



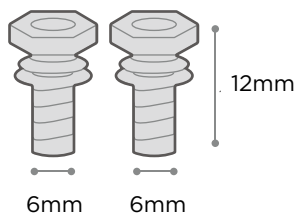
Terminal Size

M6 (1.25mm Metric Thread)

Post Bolts

M6 (Metric Thread
x 12mm Bolt Length)

(The bolts can be replaced with
M6 bolts of other lengths based on
actual needs.)



2 GENERAL INFORMATION

Combination: **12.8V50Ah**

Dimension: **L 9.0" x W 5.4" x H 8.4"**

Plastic Shell Color: **Black**

Operating Voltage: **12.8V**

Charging Voltage: **14.2V**

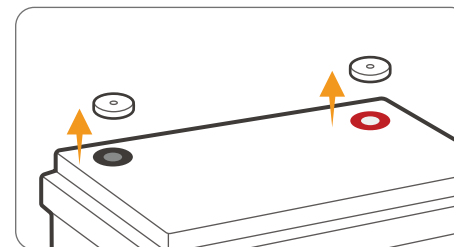
Max Continuous Load Power: **640W**

Max Continuous Charge/Discharge Current: **50A**

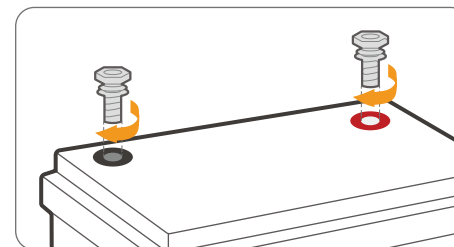
3 USER GUIDE



Contact us at support@newportvessels.com to activate
YOUR WARRANTY

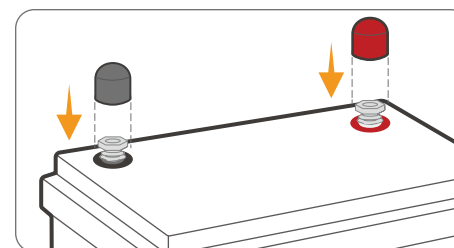


O PULL OUT insulating plugs



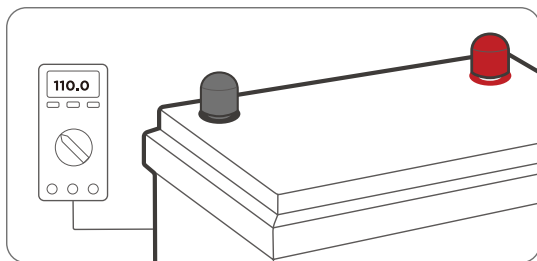
O TIGHTLY SCREW IN post bolts

⚠ WARNING: Please tightly screw in the post bolts. Having loose battery terminals will cause the terminals to build up heat resulting in damage to the battery.

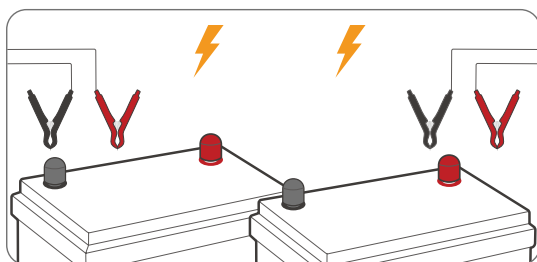


O PUT ON insulating covers

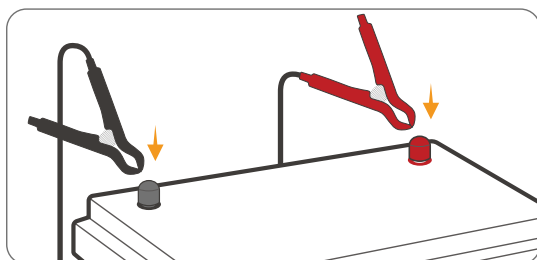
⚠ WARNING: Please put on the insulating covers to avoid metal or conductive objects touching the positive and negative terminals of the battery at the same time, otherwise it is likely to cause a short circuit.



- **TEST** the battery voltage with multimeter
 - ≥ 13.2V to Next Step
 - < 13.2V Contact us at SUPPORT@NEWPORTVESSELS.COM to help solve the problem



- **FULLY CHARGE** each battery separately
Refer to page 09 for battery charging methods



- **CONNECT TO USE** After Removing Plastic Caps
DO NOT charge with plastic caps on

4 BATTERY-PACK MAIN PARAMETERS

Cell: **Prismatic LiFePO4 Battery**

Nominal Capacity: **50Ah**

Usable Capacity: **50Ah**

Nominal Voltage: **12.8V**

Energy: **640Wh**

Charge Method: **CC/CV**

Charge Voltage: **14.2V**

Recommend Charge Current: **6A (0.2C)**

Battery Management System (BMS) Board: **50A**

Max. Continuous Charge / Discharge Current¹: **50A**

Max. Discharge Current 5 Seconds: **90A**

Max. Continuous Load Power²: **640W**

Cycle Life: **≥3000 times**

Internal Impedance: **≤15mΩ**

Battery Pack Case: **Acrylonitrile Butadiene Styrene (ABS) Plastic**

Protection Class: **IP67**

Dimension: **L 9.0" x W 5.4" x H 8.4"**

L 229 x W 138 x H 213

Temperature Range: Charge **0°C to 50°C / 32°F to 122°F**

Discharge **-20°C to 60°C / -4°F to 140°F**

Storage **-10°C to 50°C / 14°F to 122°F**

1. The maximum continuous current that the battery can withstand.
2. The maximum continuous output power that the battery can support.

5 NOTICE BEFORE USING

Always put the insulating covers on the post bolts to avoid metal or conductive objects touching the positive and negative terminals of the battery at the same time, otherwise it is likely to cause a short circuit.

Install the battery upright with post bolts facing up it cannot be mounted upside down. If you need to mount the battery on its side, please contact support@newportvessels.com to confirm this orientation is acceptable.

Tightly screw in the post bolts. Having loose battery terminals will cause the terminals to build up heat resulting in damage to the battery.

This battery is not intended to be used to start any devices, please **DO NOT USE IT AS A STARTING BATTERY.**

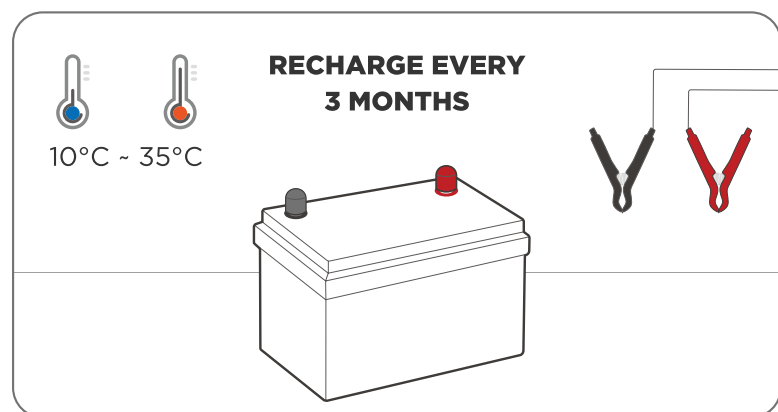
5.1 LONG-TERM STORAGE

Temperature

The battery can be operated at a temperature of -20°C to 60°C/-4°F to 140°F, and temperature between **10°C to 35°C/50°F to 95°F** is ideal for long-term storage. Store in a fireproof container and away from children.

Capacity

For a longer-lasting product, it is best to store your battery at a 50% charge level and recharge every three months if it is not going to be used for a long time.

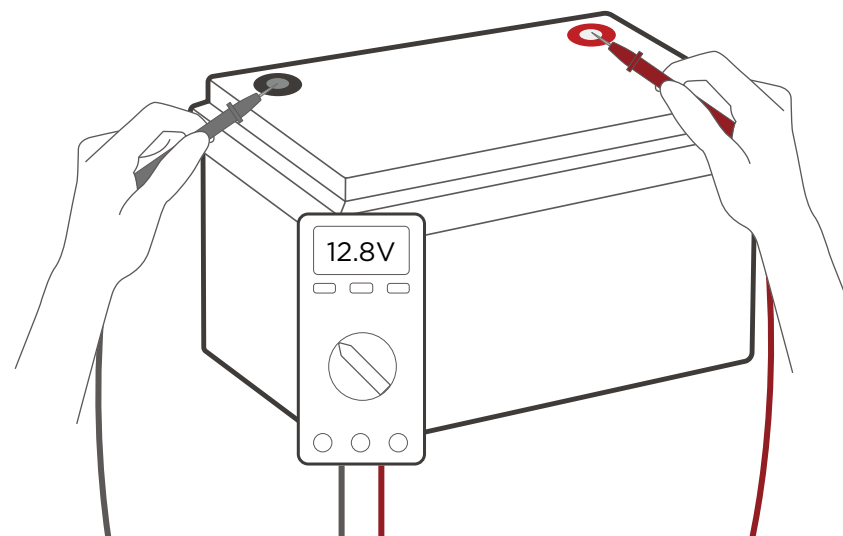


6 CHARGING METHODS

6.1 THE VOLTAGE WHEN CHARGING & DISCHARGING

Based on the characteristics of Lithium Iron Phosphate (LiFePO₄) batteries, the voltage measured by all LiFePO₄ batteries during charging/discharging is not the real voltage of the battery. Therefore, after charging/discharging and disconnecting the battery from power source, the voltage of the battery will gradually drop/increase to its real voltage.

If you need to test the voltage of the battery please disconnect all the connections to the battery and test its voltage after putting it aside for over 30 mins.



Tips When Testing The Battery Voltage with a Multimeter

- Put the red probe (+) tightly on the positive terminal (not the post bolts), and the black probe (-) on the negative terminal.
- Do not touch the metal part of the probes with your hands during use.



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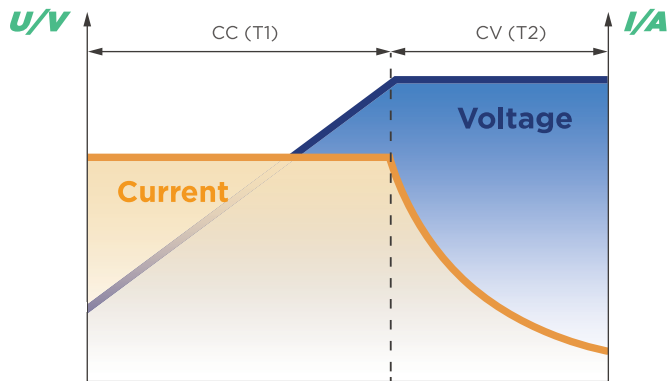
NSI30
INFLATABLE SKIFF

6.2 BATTERY CHARGING LOGIC

The material characteristics of the LiFePO₄ battery is determined that its charging curve is obviously different from that of a lead-acid battery. Compared with a lead-acid battery, the LiFePO₄ battery has a simpler charging process and mode. Therefore, it is recommended to select LiFePO₄ for your charging mode.

If LiFePO₄ mode is not available, please refer to the recommended parameters on Page 12-13 for setting.

6.2.1 LiFePO₄ Battery Charging Mode



LiFePO₄ Battery Charging Curve

CC (Constant Current) Phase (T1)

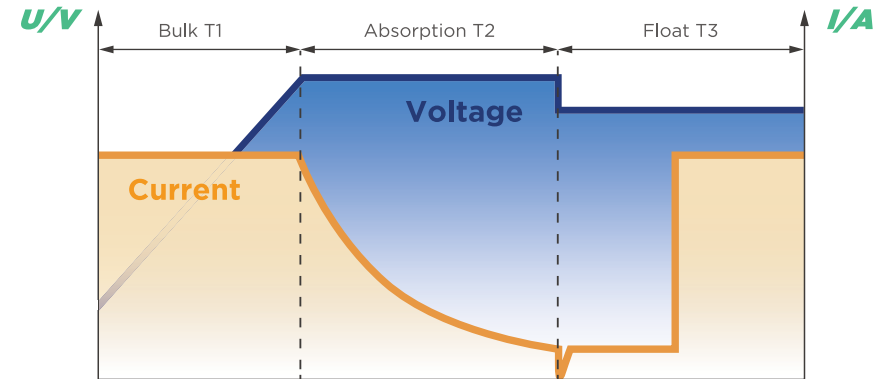
In the beginning, a discharged battery will be charged with a constant current and voltage will be climbing steadily until reaching the constant voltage set point which varies for different charging methods.

CV (Constant Voltage) Phase (T2)

The battery maintains a constant voltage during this phase while the current gradually decreases to 0.8A (0.02C) which is also known as tail current¹. At this point, the charging is cut off and the battery is fully charged.

1. Tail Current (A) = Battery Capacity * 0.02C. Eg, Ah*0.02C = 0.8A tail current

6.2.2 Lead Acid Battery Charging Mode



Lead Acid Battery Charging Curve

Bulk/Boost Phase (T1)

In the beginning, a discharged battery will be charged with a maximum current and voltage will be climbing steadily until reaching the absorption voltage set point.

Absorption Phase (T2)

The battery reaches the absorption voltage set point and holds the voltage constant while the current gradually decreases until the battery is becoming full (within 10-20%). Generally, absorption will not exceed 3 hours to prevent overcharging.

(This phase is basically equivalent to the CV phase of LiFePO₄ battery charging.)

Absorption Phase (T2)

After the absorption stage, the voltage of the battery will reduce to the float voltage set point and the current will also be discharging and offsetting any self-discharge. Heavier battery discharge may set the controller back to Bulk/Boost or Absorption to replenish energy lost while energy is available.

(LiFePO₄ battery does not have this charging phase.)

6.3 METHOD 1 | SOLAR PANEL(S) & CONTROLLER

6.3.1 Solar Panel

➤ **Recommend Power** > 400W

The battery can be fully charged in one day (with effective sunshine 4.5hrs/day) by 400W solar panels.

It may take more than one day to fully charge the battery by > 400W solar panels since the duration and intensity of light would be a great factor for their charging efficiency.

6.3.2 Controller

➤ **Recommended Charging Current**

8A (0.2C) The battery will be fully charged in around 5 hrs to 100% capacity.

20A (0.5C) The battery will be fully charged in around 2 hrs to around 97% capacity.

➤ **Recommended Charging Mode:** 12V LI (LiFePO4)

6.3.3 Controller Settings

Refer to the below parameters if you need to manually set up your controller. As different types of batteries have different charging modes (refer to Page 10-11), it is recommended to set only the following parameters for LiFePO4 batteries. The settings for other types of batteries do not apply to LiFePO4 batteries except for the following settings.

Charging	Charge/Bulk/Boost Voltage	14.2V
	Absorption Voltage	14.2V
	Over Voltage Disconnect	15V
	Over Voltage Reconnect	14.2V
	Tail Current	0.8A (0.02C)
Discharging	Under Voltage Warning	/
	Under Voltage Recover	/
	Low Voltage Disconnect	8.8V
	Low Voltage Reconnect	10.5V

6.4 METHOD 2 | BATTERY CHARGER

Use 12V lithium iron phosphate (LiFePO4) battery charger to maximize the capacity.

➤ **Recommended Charging Voltage:** 14.8V

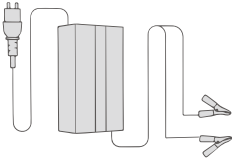
➤ **Recommended Charging Current:** 6A

8A (0.2C) The battery will be fully charged in around 5 hrs to 100% capacity.

20A (0.5C) The battery will be fully charged in around 2 hrs to around 97% capacity.

Tips

1. Connect the charger to the battery before connecting it to the grid power in case of sparks.
2. It's recommended to disconnect the charger from the battery after fully charging.



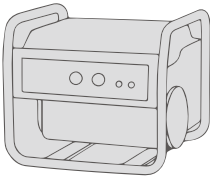
6.5 METHOD 3 | ALTERNATOR / GENERATOR

Newport Battery can be charged by an alternator or generator. If the alternator/generator supports DC output, a DC-to-DC charger needs to be added between the battery and the generator; if the alternator/generator supports AC output, please refer to the recommendations in “Battery Charger” above to add a suitable battery charger between the batter and the generator.

➤ **Recommended Charging Voltage:** 14.8V

➤ **Recommended Charging Current:** 6A

6A (0.2C) The battery will be fully charged in around 8.3 hrs to 100% capacity.



7 ESTIMATE THE BATTERY CAPACITY

7.1 STATE OF CHARGE (SOC)

The battery capacity could be roughly estimated by its rest voltage (not charging/discharging voltage). As there are subtle difference in the voltages of each battery, the below parameters are for reference only.

Rest Voltage: The voltage needs to be tested at rest (with zero current) after 30 mins of disconnecting from the charger and loads.

Capacity	Charge Voltage
100%	13.38V
99%	13.37V
90%	13.36V
80%	13.3V
60%	13.28V
40%	13.17V
20%	13.02V
10%	12.9V
0%	12.86V

8 SERIES / PARALLEL CONNECTION

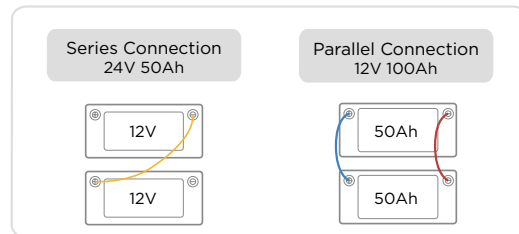
8.1 THE PREMISE OF CONNECTION

To connect in series or/and parallel, batteries should meet the below conditions:

- Identical batteries with the same battery capacity (Ah) and BMS (A);
- From the same brand (as lithium batteries from different brands have a unique BMS);
- Purchased in near time (within one month).

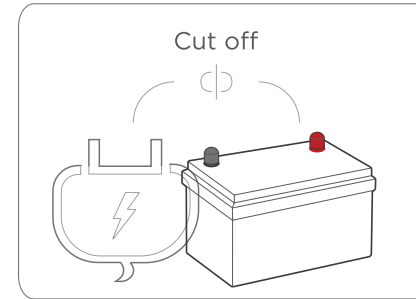
Limitation for Series/Parallel Connection

Support connecting up to 2 identical batteries for up to: 1 in series as a 24V battery system/2 in parallel as 100Ah battery systems.

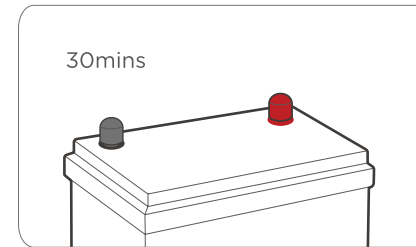


9 WHAT TO DO WHEN THE BATTERY STOPS WORKING

If the BMS has cut off the battery for protection, follow the below steps to activate it.



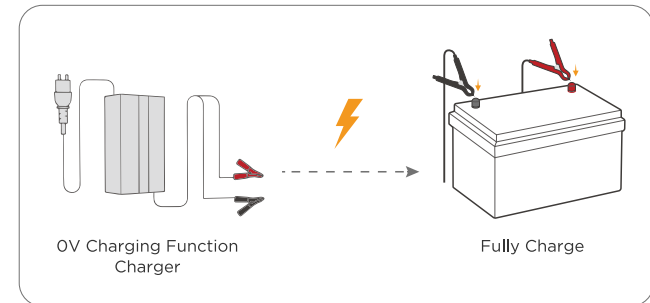
○ **UNPLUG** all the connections from the battery



○ **LEAVE THE BATTERY ASIDE FOR 30MINS** Then the battery will automatically return to normal voltage (>12V) and can be used after being fully charged.

If the battery is unable to recover after the above steps, please try activating by the below methods: After activated (voltage > 12V) and fully charged by the normal charging method, it can be used normally.

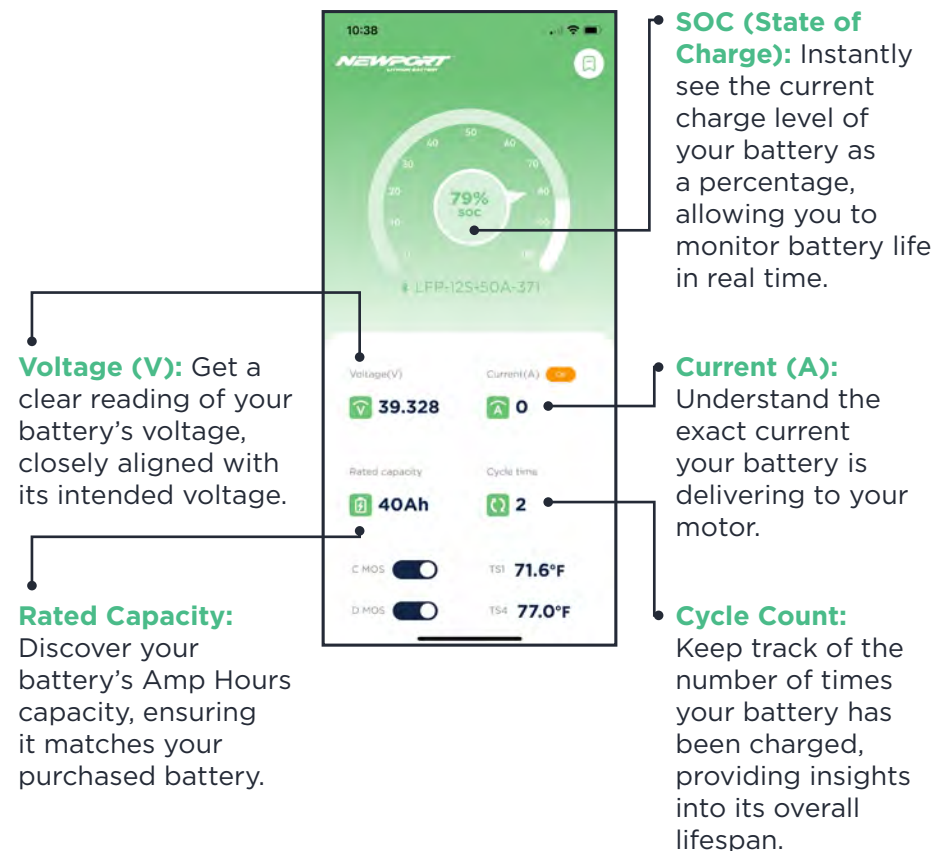
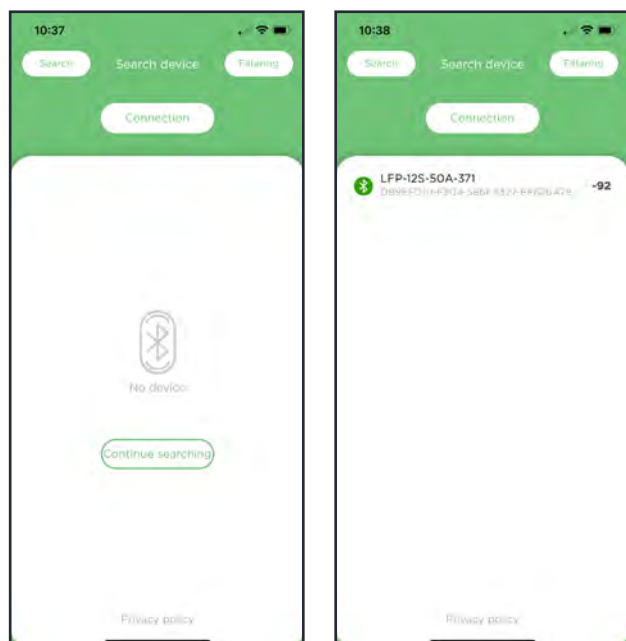
- Use a charger with a 0V charging function to fully charge the battery¹.



1. The charger can charge the battery starting from 0V.

10 APP SETUP

1. **Launch the Newport Bluetooth App:** Download the Newport Bluetooth App from your app store. Open the app to begin connecting your battery.
2. **Easy Battery Detection:** Upon opening the Newport Battery App, tap “Continue Searching.” If you don’t see any batteries appearing, ensure you’re close to the battery.
3. **Seamless Battery Connection:** Your battery will be displayed on the screen. Match the last three digits of the displayed battery with the three serial numbers on top of your battery. If the numbers match, simply tap on the battery to establish the connection.



CUSTOMER SUPPORT

If you have questions that are not answered in this manual or troubleshooting is not successful, please contact Newport! Our California based customer service team is standing by to assist you. **8:30 AM - 7:00 PM ET**

 **(866) 721-0002**

 **support@newportvessels.com**

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