User Manual for 45000

AC Balance Charger/Discharger

WARNING! WARNING! WARNING! WARNING! WARNING!

FIRE HAZARD

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SEVERE AND PERMANENT DAMAGE TO THE BATTERIES AND THE CHARGER, CAUSE SERIOUS PERSONAL INJURY, AND EVEN START A FIRE.

Thank you for purchasing this AC Balance Charger/Discharger from JEGS.

Read this manual in its entirety before attempting to use this product. Damage resulting from misuse or modification will void your warranty. JEGS will not be held responsible for any incidental damages or injury that may result from improper use of this product.

In purchasing this product the buyer/user agrees to bear all the responsibilities of these risks and not hold JEGS, its distributors (owners and employees) and/or retailer responsible for any accidents, injury to person, or property damage. If you do not agree with these conditions, please return the charger to the place of purchase.

Failure to follow these instructions can result in severe and permanent damage to batteries and the charger, cause personal injury, and even start a fire.

JEGS chargers are designed and intended for use with radio controlled vehicle batteries only and any other uses are not authorized, recommended, or warrantied by JEGS.

If you have read this entire manual and are still unclear regarding any of the functions, warnings, or safety instructions, please contact our customer service department PRIOR to using this charger.

WARNING:
Charging Batteries Can Be Hazardous!

Table of Contents

Caution & Warnings

1. Before attempting to charge or discharge a battery, first read the safety warnings and charging instructions provided with your battery. Make sure to contact the battery manufacturer if these instructions were not provided or are unclear.

2. Before charging or discharging any battery, carefully inspect the pack to ensure no physical damage, swelling or "ballooning" is evident. Signs such as this indicate that a dangerous problem exists with the battery that could lead to a catastrophic failure including fire and explosion.

3. Under no circumstances should you charge or discharge any battery that has become swollen "ballooned" or been damaged in any way. Refer to the safety warnings provided with your battery for further instruction.

4. Batteries on charge, or discharge MUST remain under constant observation so that you may react quickly should any problems arise.

5. Always keep a class D chemical fire extinguisher

6. Be sure to understand the specifications of the battery pack to be charged or discharged. If the charger program is set up incorrectly the battery pack can be severely damaged, catch fire, and cause personal injury. Refer to the battery label for the specifications of your battery pack, and if they are unclear be sure to contact the manufacturer.

7. Battery packs when improperly charged or discharged, can sustain permanent damage, catch fire, explode, and cause personal injury.

8. Immediately discontinue the charging or discharging of a LiPo battery that begins to swell or "balloon".

Continued onto next page. →

Caution & Warnings Cont.

9. This charger and the battery to be charged or discharged should be placed upon a heat-resistant, non-flammable and non-conductive surface away from any flammable materials.

10. Never charge a battery pack that feels too hot to the touch. Always allow a battery to cool to ambient temperature before charging.

11. Always make sure to use a LiPo safety sack or other fireproof containers when charging or discharging battery packs.

12. Charge each battery pack individually. Never charge battery packs in series or parallel. Using this method may result in the improper cell recognition of the charger, improper charging rate, and over charging that may lead to fire or explosion.

13. Never leave the battery charger unsupervised when it is connected to its power supply. If any type of malfunction is observed immediately terminate the charging process and refer to the operation manual.

14. Keep the ac balance charger/discharger away from dust, water, heat, direct sunlight and vibration.

15. Do not disassemble, modify, or attempt any form of repair on this charger.

Features & Specifications

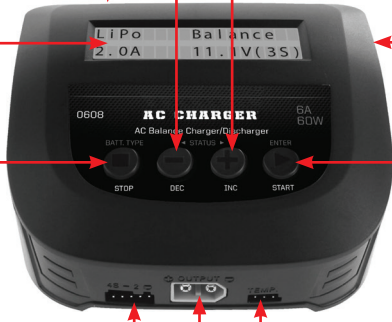
Features

- High Power 60-Watt, 6-Amp Charging Circuit
- Integrated XT60 & Balance Connections
- Multiple Chemistry Charging: LiPo, LiHV, LiFe, Li-ion, NiMH, NiCd, and Pb
- Operating Software Optimized for Safety & Ease of Use
- Charge Lead Included:

Specifications

- AC Input Voltage:
  - 100V-240V
- Charge Current:
  - 0.1-6.0A
- Circuit Power:
  - Max 60W for charging
  - Max 10W for discharging
- Battery Type:
  - LiPo
  - LiHV
  - Li-ion
  - NiMH
  - NiCd
  - Lead Acid (Pb)
- Lithium Battery Cell Count:
  - 2S-4S NiMH/NiCd
- NiCd Battery Cell Count:
  - 6-8 Cells Lead Acid (Pb)
- Battery Voltage:
  - 6V-12V

Exterior of Unit



AC Input (100-240V)

Decrease/Increase
(To select sub program
& to alter values)

LCD Display

Cooling Fan

Battery Type:
(To select
main program
& to stop
the operation)

Start/Enter
(To start
or resume
operations)

Balance Lead Ports:
- 2S-4S
- JST-XH

Temperature Sensor Port

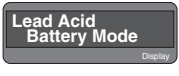
XT60 Charge Lead Port

Main Menu Options

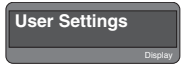
To navigate to any of the main menu options press the BATT TYPE/STOP button until the menu is reached. Press the START/ENTER button to enter the desired menu option.

Lithium Battery Mode contains options to allow for the balance charging and storage charging of LiPo, LiHV, LiFe, and Li-ion batteries.

NiMH/NiCd Battery Mode contains program options to allow for the charging, discharging and cycling (charging & discharging) of NiMH and NiCd batteries.



Lead Acid Battery Mode contains program options to allow for the charging of Lead Acid (Pb) batteries.



User settings menu contains program options for advanced user settings. This charger features preprogrammed advanced settings that are well suited for most users.

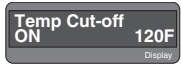
Lithium Battery Meter provides user individual cell voltage readings and overall pack voltage readings for any 2S-4S LiPo, LiHV, LiFe, and Li-ion batteries connected to the XT60 charge lead port and balance lead port of this charger.

User Settings

This charger features preprogrammed settings that are well suited for most users. To adjust these, navigate to User Settings by pressing BATT TYPE/STOP button until the menu is reached and then press the ENTER/START button.

To navigate through the specific user setting options use the INC (increase) button to move forward or the DEC (decrease) button to move backwards. Return back to the main menu options at any time by pressing the BATT TYPE/STOP button.

Once the setting to be adjusted is reached press the ENTER/START button and the value will begin to flash indicating the value is in adjust mode. Use the INC or DEC button to adjust the value and once complete press the ENTER/START button to adjust the next value applicable. When the adjustment values are no longer blinking the settings have been saved.



This value controls when the charger will stop an active process (charge/storage/discharge/cycle) when an optional temperature sensor is used. This is especially useful for NiMH and NiCd batteries as it is common for battery temperature to rise on charge. If an optional temperature sensor is used please exercise caution increasing this value from the default 120ºF. Setting this value to low may cause the charger to stop the process prematurely.

This value controls the amount of resting time between charge and discharge that a NiMH/NiCd battery will experience when using the cycle option. Because heat causes irreversible battery damage please exercise caution when adjusting this value below the default of 15 minutes.

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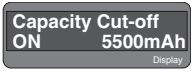
User Settings Cont.

This value controls the amount of time the charger will allow any active process (charge/storage/discharge/cycle) to run. With the safety timer on by default at 120 minutes any active process will automatically stop at this set time. This helps prevent over charging of a battery if it proves to be faulty or the termination circuit cannot detect the battery is full. This is one of many redundant safeties the charger uses while monitoring active processes.



This value controls the amount of capacity (mAh) the charger will allow during any active process (charge/storage/discharge/cycle). With the default set to on at 5500mAh during any single charge/storage/discharge/cycle the charger will automatically stop at 5500mAh. For the best results set this value to just above the label value on the battery. This will ensure the process does not stop prematurely. The default setting of 550mAh is recommended for all 5000mAh to 5200mAh batteries.

With the key beep set to ON, every button press will cause a short beep to sound. With the alert tone set to ON, a series of tones will sound following completion of any process (charge/storage/discharge/cycle).

To return the charger back to default factory settings, press and hold the ENTER/START button. When complete the screen will show OK on the lower line and at this time the charger has been reverted to factory settings.

Charging & Storage Charging Lithium Batteries

To charge a LiPo/LiHV/LiFe/Li-ion battery, press the BATT TYPE/STOP button until the screen shows Lithium Battery Mode and then press START/ENTER.

The screen is broken up into four quadrants and the value in each quadrant is adjustable allowing the charger to be configured to a wide range of lithium batteries. Before proceeding, be sure to confirm the appropriate settings for your battery as recommended by the battery manufacturer.

To change the first quadrant's value press the START/ENTER button and the value will begin to flash. Change the value using the INC (increase) or DEC (decrease) buttons. Pressing the START/ENTER button once more will cause the next quadrant value to flash and this can be changed in the same way. When the final selection for quadrant 4 has been made press the START/ENTER button once more.

At this point no value should be flashing and this information has been saved. Unless these settings are later adjusted, the next time the charger is used these settings will automatically be recalled with the default mode being charge.

Warning: Lithium battery packs when improperly charged or storage charged, can sustain permanent damage, catch fire, explore, cause personal injury and property damage.

Warning: Never charge on or near flammable items and never leave a battery on charge, storage charge, or cycle left unattended.

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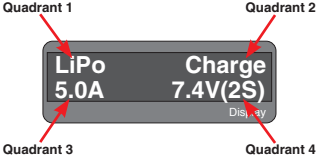
Charging & Storage Charging Lithium Batteries Cont.



Quadrant 1 allows the charger to be set for LiPo, LiHV, LiFe, and Li-ion battery types. By default the charger is set to LiPo mode supporting 7.4V, 11.1V, and 14.8V batteries. Notice the nominal battery voltage in quadrant 4 will change to match the selected lithium battery type.

Quadrant 2 allows the charger to be set for charge or storage. Charge mode provides the lithium battery with a balancing charge, which ensures the cell voltages are equalized throughout the charge process. Storage mode will either balance charge or discharge the battery as required to return the battery to a safe storage voltage, which is roughly nominal voltage of the battery pack.

Note: Storage mode should be used for all lithium batteries within 24 hours of having depleted the battery or within a few days for a charged battery pack that will not be used for a week or more. This will help to prevent irreversible damage to your lithium battery.

Quadrant 3 allows the charge or storage charge rate (current in amps) to be set. Confirm the recommended charge rate for your battery and set this per the manufacturer's recommendations. As a general reference, a safe charge rate for LiPo batteries is 1C or 1 times the capacity of the battery in amp

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1C Charge Rate Examples

Battery Label Voltage	Calculation	1C Charge Rate (Amps)
30C 2S 5000mAh 7.4V LiPo	5000mAh/1000 = 5Ah	5.0A
50C 3S 5200mAh 11.1V LiPo	5200mAh/1000 = 5.2Ah	5.2A
25C 4S 800mAh 14.8V LiPo	800mAh/1000 = 0.8Ah	0.8A

Charging & Storage Charging Lithium Batteries Cont.

hours (Ah). Most RC battery manufacturers label batteries with a mAh value, which is 1000 times the amp hours (Ah) rate. So to calculate the 1C charge rate divide your mAh label value by 1000 and this is your 1C charge rate.

Warning: Exceeding a 1C charge rate may cause irreversible damage to the battery pack which may lead to fire, explosion, personal injury or property damage

Quadrant 4 allows the cell count and voltage of the battery to be set. Confirm the nominal voltage of your battery pack, which is typically listed on the battery label. If the label is damaged or this informaiton is unclear contact the battery manufacturer before proceeding.

After having confirmed all values are accurate, to start the LiPo/LiHV/LiFe/Li-ion charge or storage charge, first connect the batteries main lead (largest two red and black wires with a single plug) to the charger. This charger has a built in XT60 charge lead port and also includes a XT60 (yellow) to EC3 (blue) adapter. Contact your local hobby shop for additional adapters as needed.

With the main lead connected to the charger, now connect the battery balance lead (smallest wires with a single plug) to the appropriate balance lead port location, which is just to the left of the XT60 charge lead port.

Note: This charger will not allow a charge or storage charge of lithium battery without the balance lead connected to the charger and the

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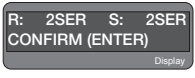
Quadrant 4 Voltage & Cell Count (S/Series) Values by Lithium Type

LiPo	**7.4V (2S)**	**11.1V (3S)**	**14.8V (4S)**
LiHV	**7.6V (2S)**	**11.4V (3S)**	**15.2V (4S)**
LiFe	**6.6V (2S)**	**9.9 (3S)**	**13.2V (4S)**
Li-Ion	**7.2V (2S)**	**10.8V (3S)**	**14.4V (4S)**

Charging & Storage Charging Lithium Batteries Cont.

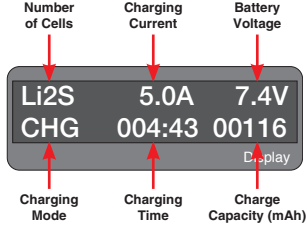
screen will provide an error message.

Your battery is now ready to charge or storage charge. Start the selected mode by pressing and holding the START/ENTER button for 3 seconds after which a series of tones will sound followed by a “Battery Check Wait...” message on the screen. Following the “Battery Check Wait...” screen the charger will display R: and S: value followed by confirm (ENTER or STOP). “R:” represent the cell count recognized by the charger while the “S:” value represents the value selected by the user as part of the charger program setup. Confirm that the R: and S: values match before pressing START/ENTER.



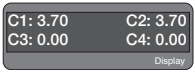
Warning: Over discharging batteries MAY be detected as a lower cell count pack. Always confirm your settings before starting a charge sequence.

When charging or storage charging, press the DEC (decrease) button to scroll through other useful details like the end voltage for the battery on charge or storage charge, capacity cut-off, safety time, and temp cut-off setting values. Press INC (increase) button to view the current voltage for each individual cell in the battery pack. To return to the main screen press the START/ENTER button.



Lithium Battery Meter

This charger features a lithium battery meter, which will display the individual cell voltage, as well as the overall voltage from the battery pack. To use this feature connect both the balance lead and the main lead of the battery to the charger. Press the BATT TYPE/ STOP button until the screen displays Lithium Battery Meter and Press START/ENTER.



The first screen shows the voltage of each individual cell for the battery pack that is connected.

A second screen is available to show the overall voltage of the battery pack as well as providing values for the highest cell voltage (H:) in the pack as well as the lowest cell voltage (L:) in the pack. To access this screen press the INC (increase) button. You can return to the individual cell voltage screen by pressing the INC (increase) button once more.

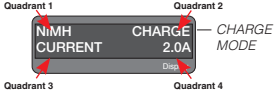
When finished press the BATT TYPE/ STOP button to return back to the main menu options.

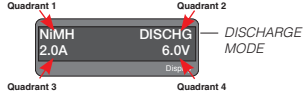
Charging/Discharging/Cycling NiMH & NiCd Batteries

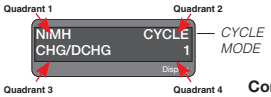
To charge, discharge or cycle (charging & discharge) a NiMH or NiCd battery, press the BATT TYPE/STOP button until the screen shows NiMH/ NiCd Battery Mode and then press START/ENTER.

The screen is broken up into four quadrants and the value in each quadrant is adjustable allowing the charger to be configured for charging, discharging and cycling modes for both NiMH and NiCd batteries. Before proceeding be sure to confirm the appropriate settings for your battery as recommended by the battery manufacturer.

To change the first quadrant's value press the START/ENTER button and the value will begin to flash. Change the value by using the INC (increase) or DEC (decrease) button. Pressing the START/ENTER button once more will cause the next quadrant value to flash and this can be changed in the same way. When the final selection for quadrant 4 has been made press the START/ENTER button once more. At this point no value should be flashing and this information has been saved. Unless these settings are later adjusted, the next time the charger is used these settings will automatically be recalled with the default mode being charge.







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Charging/Discharging/Cycling NiMH & NiCd Batteries Cont.

Quadrant 1 allows the charger to be set for NiMH or NiCd batteries. By default the charger is set to NiMH mode supporting 7.2V, 8.4V, and 9.6V batteries.

Quadrant 2 allows the charger to be set for charge, discharge or cycle. Charge mode will bring the battery to full charge for use, discharge will bring the battery to a user defined voltage while cycle will both charge and discharge the battery in the order defined by the user.

Quadrant 3 when in charge mode, is not adjustable. For discharge mode (DISCHG), this quadrant allows the discharge amperage to be set. For cycle mode, this quadrant allows for the order of discharge and charge to be set.

Set to CHG>DCHG the battery will first charge using the settings configured in charge mode, rest for the amount of time configured under User Settings > Cool Down Time, and then the charger will discharge using the settings configured in discharge mode.

Set to DCHG>CHG the battery will first discharge using the settings configured in discharge mode, reset for the amount of time configured under User Settings > Cool Down Time and then charge using the settings configured in charge mode.

Confirm the recommended charge rate for your battery and set this per the manufacturer's recommendations. As a general reference, a safe charge rate for NiHM and NiCd batteries has been provided in the table below.

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NiMH to NiCd Charge Rate Recommendations

Battery Capacity (mAh)	Charge Rate (A)
Less than 3000mAh	6.0V
3000mAh to 3600mAh	7.0V
4200mAh to 5000mAh	8.0V

Charging/Discharging/Cycling NiMH & NiCd Batteries Cont.

Quadrant 4 for charge mode allows the charge rate in amps (A) to be set. For discharge mode, this quadrant allows the ending voltage to be set. JEGS recommends setting this value to no lower than 1.0V per cell unless otherwise specified by the battery manufacturer. Cell count and discharge voltage references are provided in the table below for the NiMH and NiCd batteries supported by the charger.

Confirm the nominal voltage of your battery pack, which is typically listed on the battery label. If the label is damaged or the information is unclear contact the battery manufacturer before proceeding.

For cycle mode this quadrant allows the number of times the battery is cycled to be set.

After having confirmed all values are accurate, start the NiMH or NiCd charge, discharge, or cycle, connect the battery's main lead to the charger. The charger has a built in XT60 charge lead port and also includes a XT60 (yellow) to EC3 (blue) adapter. Contact your local hobby shop for additional adapters as needed.

Warning: Over discharging an NiMH battery may generate excessive heat in the battery. This may cause irreversible damage to the battery pack and it may explode, cause personal injury and property damage.

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NiMH to NiCd Voltage to Cell Count

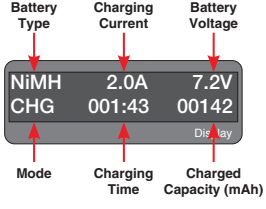
Battery Label Voltage	Cell Count	Recommended Discharge Volts
7.2V	6 cells	6.0V
8.4V	7 cells	7.0V
9.6V	8 cells	8.0V

Charging/Discharging/Cycling NiMH & NiCd Batteries Cont.

Your battery is now ready to charge, discharge, or cycle. Start the selected mode by pressing and holding the START/ENTER button for 3 seconds after which a series of tones will sound followed by a “Battery Check Wait...” message on the screen. If the charger does not detect any abnormalities the mode will automatically start.

When charging, discharging, or cycling, the screen provides useful information like the type of battery (NiMH or NiCd), current rate of charge, battery voltage, mode (charge, discharge, or cycle displaced as C>D or D>C) and the amount of mAh or capacity that the charger has put into or taken out of the pack currently being charged, discharged, or cycled. Press the BATT TYPE/STOP button to stop the process at any time.

When charging or storage charging, press the DEC (decrease) or INC (increase) button to scroll through the available information options such as capacity cut-off, safety timer, temp cut-off setting values, and internal termperature readings.



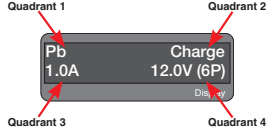
Charging Lead Acid (Pb) Batteries

WARNING! WARNING! WARNING! WARNING! WARNING!

FIRE HAZARD

CHARGING AND DISCHARGING BATTERIES HAS THE POTENTIAL FOR FIRE, EXPLOSION, SERIOUS PERSONAL INJURY AND PROPERTY DAMAGE. BEFORE USE, READ ALL CHARGER AND BATTERY WARNINGS.

To charge a lead acid (Pb) battery, press the BATT TYPE/STOP button until the screen shows Lead Acid Battery Mode and then press START/ENTER.



The screen is broken up into four quadrants. Quadrants 3 and 4 have the only values that are adjustable allowing the charger to be configured for use with a wide range of lead acid batteries. Before proceeding, be sure to confirm the appropriate settings for your battery as recommended by the battery manufacturer.

To change the first quadrant's value (quadrant 3) press the START/ENTER button and the value will begin to flash. Change the value by using the INC (increase) or DEC (decrease) button. Pressing the START/ENTER button once more will cause the next quadrant value to flash and this can be changed in the same way. When the final selection for quadrant 4 has been made press the START/ENTER button once more. At this point no value should be flashing and this information has been saved. Unless the settings are later adjusted, the next time the charger is used these settings will automatically be recalled with the default mode being charge.

Quadrant 3 allows the charge rate (current in amps) to be set.

Warning: Charging lead acid batteries at a high rate can cause permanent damage to the battery which may lead to dangerous hydrogen gas being released.

Confirm the recommended charge rate for your battery and set this per the manufacture's recommendations.

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Charging Lead Acid (Pb) Batteries Cont.

As a general reference a safe charge rate for lead acid is typically 1/10th of the battery's capacity. So for a 10Ah battery the recommended charge rate would be 1.0A.

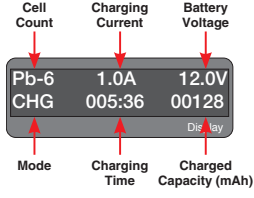
Quadrant 4 allows the cell count and voltage of the battery to be set. Confirm the nominal voltage of your battery pack, which is typically listed on the battery label. If the label is damaged or the information is unclear contact the battery manufacturer before proceeding.

After having confirmed all values are accurate, to start the lead acid charge, first connect the battery's main lead to the charger. The JEGS charger has a built-in XT60 charge lead port and also includes a XT60 (yellow) to EC3 (blue) adapter. Contact your local hobby shop for additional adapter as needed.

With the battery main lead connected to the charger, start the charge by pressing and holding the START/ENTER button for 3 seconds after which a series of tones will sound followed by a "Battery Check Wait..." message on the screen. If the charger does not detect any abnormalities the charge will automatically start.

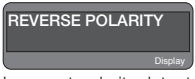
When charging, the screen provides useful information like the current rate of charge, number of cells being charged, battery voltage and the amount of mAh or capacity that the charger has put into or taken out of the pack currently being charged or storage charged. Press the BATT TYPE/STOP button to stop the charging process at any time.

When charging, press the DEC (decrease) or INC (increase) button to scroll through other useful details like the end voltage for the battery on charge, capacity cut-off, safety time, and temp cut-off settings values as well as internal temperature readings.

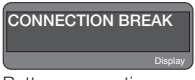


Warning & Error Messages

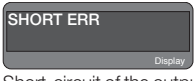
Here is a list of all warning and error messages the charger may display. Please refer to this list should you have any difficulty.



Incorrect polarity detected.



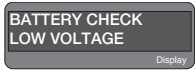
Battery connection was interrupted.



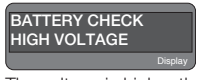
Short-circuit of the output termination.

Input voltage wrong or outside of the allowable range

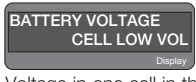
The charger has an internal error. Please contact JEGS customer service.



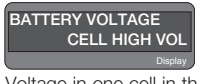
The voltage is lower than the setting currently selected. Please check the number of cells in the battery pack.



The voltage is higher than the setting currently selected. Please check the number of cells in the battery pack.



Voltage in one cell in the pack is too low to safely charge. Please see the voltages of each cell and the LiXX program selected



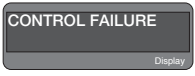
Voltage in one cell in the pack is too high to safely charge. Please see the voltages of each cell and the LiXX program selected

Continued onto next page.

Warning & Error Messages Cont.

Connector error. Please check the connections at the battery and charger.

Internal temperature of the charger is too high. Allow time for the charger to cool



The processor cannot control the feeding current. Contact JEGS customer service

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JEGS 1-YEAR WARRANTY

We are certain of the quality of all JEGS products. Therefore, all JEGS products come with a 1-year Warranty, which covers defects in materials or workmanship. JEGS will repair or, in its discretion, replace defective product free of charge for a period of 1 year from the original date of purchase.

This is a non-transferable warranty and does not cover normal wear and tear, physical damage (including water damage), battery failure due to over-discharge (as described in our written instructions) or any damage resulting from improper use (including opening of the sealed battery pack).

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

To make a warranty claim, please submit a support case at www.jegs.com or call us at 1-800-345.4545.

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