

KICKASS

OUTBACK PROOF GEAR

8-STAGE AUTOMATIC **BATTERY CHARGER** MCU CONTROLLED - HIGH FREQUENCY SWITCHMODE



MODELS: KACHG1212, KACHG1220

Instruction Manual

Please read user manual carefully before use.



- ◆ Before using the charger, please read and understand the instructions.
- ◆ Provide adequate ventilation and prevent sparks and flames around charging area. Explosive gases may escape from the battery during charging.
- ◆ Designed For charging 12 Volt Lead Acid, AGM, Gel and Calcium batteries ONLY.
- ◆ Disconnect the 240V AC mains supply before making or breaking the connections to the battery.
- ◆ The battery charger must be plugged into an earthed socket-outlet.
- ◆ Designed for indoor use only. Do not expose to rain or moisture.
- ◆ Connection to mains supply is to be in accordance with National wiring rules.
- ◆ If the AC cord is damaged do not attempt to use charger. It must be replaced or repaired by a qualified person.
- ◆ Do not attempt to charge non-rechargeable batteries.
- ◆ Corrosive substances may escape from the battery during charging and damage delicate surfaces. Store and charge in a suitable area.
- ◆ Never charge a frozen battery.
- ◆ Ensure vehicle engine, ignition and accessories including lights, appliances etc are turned off prior to charging.
- ◆ This appliance is not intended for use by young children or any person with limited capabilities (mental and physical) unless they have been adequately supervised by a responsible person to ensure that they can use the appliance safely.
- ◆ Please store disconnected and out of reach of unsupervised children

8-STAGE AUTOMATIC CHARGING

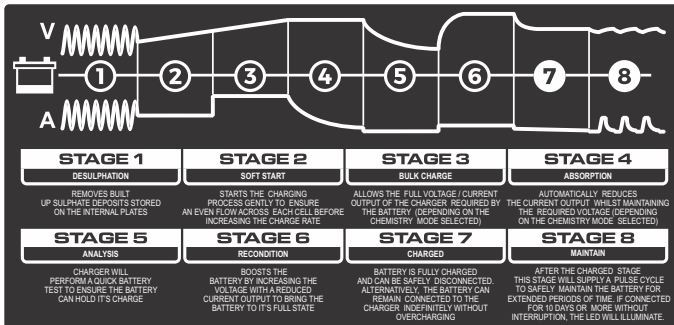
This is a fully automatic battery charger featuring 8 charging stages

Automatic charging is proven to provide your battery with an optimal charge and maintenance sequence that will also protect your battery from being overcharged. This allows you to leave the charger connected to the battery indefinitely if required.

8-stage charging is a very accurate and comprehensive charging process that will result in a better battery performance with a longer life expectancy. This is evident when comparing to the use of more traditional chargers.

8-stage chargers are suitable for most battery types including WET, Calcium, Maintenance Free, AGM, and GEL batteries. They may also help restore drained and sulphated batteries.

The 8-Stages Include: Desulphation - Soft Start - Bulk - Absorption - Analyse - Recondition - Float - Maintain



	GEL (12V)	AGM (12V)	WET (12V)	CALCIUM (12V)	TIME REFERENCE
1 DESULPHATION	11V	11V	11V	11V	Max 8h
2 SOFT START	50% Current until 12.5V	50% Current until 12.5V	50% Current until 12.5V	50% Current until 12.5V	Max 8h
3 BULK	100% Current until 14.1V	100% Current until 14.4V	100% Current until 14.7V	100% Current until 14.7V	Max 24h
4 ABSORPTION	Constant 14.1V until current drops to 15%	Constant 14.4V until current drops to 15%	Constant 14.7V until current drops to 15%	Constant 14.7V until current drops to 15%	30 minutes
5 ANALYSE	Checks if voltage holds at 13.2V	Checks if voltage holds at 13.2V	Checks if voltage holds at 13.2V	Checks if voltage holds at 13.2V	90sec
6 RECONDITION	Constant current (15%) limited to 14.1V	Constant current (15%) limited to 14.4V	Constant current (15%) limited to 16V	Constant current (15%) limited to 16V	30 mins or 4 hrs depending on battery voltage (Calcium model must enter Recondition stage)
7 FLOAT	13.7V 100% Current	13.7 V 100% Current	13.7V 100% Current	13.7V 100% Current	10 days charge cycle
8 MAINTAIN	During 12.6V-14.1V the current control at 100%~20%	During 12.6V-14.4V the current control at 100%~20%	During 12.6V-14.7V the current control at 100%~20%	During 12.6V-14.7V the current control at 100%~20%	Charge cycle restarts if voltage drops

Desulphation

The Desulphation stage is designed to break down sulphation that occurs in batteries that have been left discharged for extended periods of time, this process assists in revitalizing the battery. Sulphation occurs when lead-sulphate hardens and clogs up the battery cells.

Soft Start

A preliminary charge process that reduces the initial current into the battery. This protects the battery from any high start up current from the charger and increases battery life and performance.

Bulk (Maximum Current)

Chargers the battery with the rated maximum output current until approximately 80% capacity. This stage continues until the battery's terminal voltage has risen above the set limit (depending on battery type). If the terminal voltage has not reached the set voltage limit within the pre-set time, the charger switches to fault mode (Stage 3 LED solid) and discontinues the charging process. If so, the battery is faulty or its capacity is too large.

Absorption (Constant Voltage)

This stage ensures the battery reaches a fully charged state by gradually reducing the current and maintaining a constant voltage until the battery is 100% charged.

Analyse

An automatic battery test is conducted immediately after the absorption stage. This test monitors the battery voltage for 90 seconds to determine if the charge was successful.

- ◆ 12V charger: If the voltage is below 13.2 volts (fail), the charger will initiate the Recondition stage.
- ◆ 12V charger: If the voltage is above 13.2 volts (pass), the charger will proceed to the Float Stage.

Recondition

This stage is automatically introduced if the battery is unable to hold a charge after the Analysis Stage. The Recondition Stage can recover batteries from a deeply discharged state, rejuvenating the output capacity and extending the battery life.

The Recondition stage will run for 4 hours and at the end will conduct a test to determine if the battery is now holding charge. If the battery fails this test the charger will display a fault.

Float

The Float Stage maintains the fully charged state without overcharging or damaging the battery. This means the charger can be left connected to the battery indefinitely. The battery is fully charged and can be disconnected at this stage.

Maintain

Designed to maintain the battery at 95-100% capacity over extended periods of time. The charger monitors the battery voltage and gives a Maintain when necessary to remove plate sulphation and keep the battery fully charged. This Maintain cycle is repeated infinitely over a 10 day period if left connected. If the terminal voltage drops below the set level or is disconnected, the charger automatically goes back to the beginning of the charging cycle.

Featuring the latest technology in battery chargers, switch mode chargers convert 240V AC power to 12V DC power using electronic components unlike traditional battery chargers that rely on heavy transformers. This allows the charger to be light weight and compact without sacrificing performance.

POLARITY PROTECTION

Prevents the output leads from sparking due to accidental reverse connection or short circuit, making the charger safer to use around batteries.

OUTPUT SHORT PROTECTION

Short circuit connection of the clips: Check clips are not touching each other OR Check the clips are correctly connected to the battery.

NON BATTERY LINK PROTECTION

If battery charger connects with a non battery load, it will go into protection state.

DISCONNECT PROTECTION

The charger has entered the energy save mode. This happens if the charger is not connected to the battery within 2 minutes.

OVER VOLTAGE PROTECTION

The 12V charger will automatically supply protection if the voltage is higher than 17.5V.

COOLING FAN

The charger is fitted with a fan to cool on-board electronics and maintain charging performance.

PRODUCT OVERVIEW

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The 8-stage Automatic Battery Charger consists of the following components:

1. Mode button (Press/Hold).
2. Stage LED status display indicates power, charging and fully charged.
3. Power LED.
4. Fault LED.
5. Output Voltage Display.
6. Battery type LED.
7. Quick Connect Adaptor.
8. 240V Power Cord.
9. Cooling fan.
10. Ground terminal.
11. Mounting flange.
12. Ventilation Grill.
13. 3.5mm mounting hole.
14. DC Output Lead.



The 'Charging' and 'Stage' LED's will illuminate and flash in various patterns to indicate the different Stages of Charging. See the table below for Flashing / Solid patterns.

Note:  : SOLID  : FLASH  : OFF

	POWER ON LED	STAGE LED	FAULT LED	FAULT LED	
Power Off					
Power On				00.0	
Stage	1. Desulphation		 / 		Output Voltage
	2. Soft Start		 / 		
	3. Bulk		 / 		
	4. Absorption		 / 		
	5. Analyse		 / 		
	6. Recondition		 / 		
	7. Float		 / 		
	8. Maintain		 / 		
Non Battery Link Protection				00.0	
Output Short Protection					
Output Polarity Reverse Protection					
Disconnect Protection					
Over Voltage Protection				- U -	
Is seriously sulphated		 (Stage 1 LED)		Battery Voltage	
Will not accept charge		 (Stage 2 LED)			
Faulty Battery		 (Stage 3 LED)			
Battery Fully Charged		 Fully Charged (LED)			

Stage LED: illuminates and flashes when 8-stage charging is in progress and illuminates solid when fully charged. (Stage 7/8)

POWER ON LED

If the 'Power' LED is illuminated with a:

1. SOLID LIGHT

The mains cable is connected to the wall socket.

2. FLASHING LIGHT

The charger has entered the energy save mode. This happens if the charger is not connected to the battery within 2 minutes.

FAULT LED - Solid Light

If the fault LED is illuminated solid, check the following:

Has charging been Interrupted in Stage 1, 2, or 3?

Restart the charger by pressing the MODE-button (Press/Hold).

If charging is still being Interrupted, the battery:



STAGE 1: ...is seriously sulphated and may need to be replaced.

STAGE 2: ...can not accept charge and may need to be replaced.



STAGE 3: ... battery is faulty and may need to be replaced. (Bulk charging has timed out and stopped after 24 hours).

FAULT LED - Flashing Light

Charger's Internal Temperature is too high, please turn off and disconnect charger and let it cool down. Ensure there is adequate ventilation when charging.

P/No.	KACHG1212 - 12 Volt 12 Amp			
Charger Type	8-Stage automatic			
Input Voltage	220-240V / 50Hz			
Input Power	332W			
Output Voltage	12V DC			
Output Current	12A			
Minimum Start Voltage	2V			
Back Drain	1mA			
Current Fuse Rating	250VAC, T3.15A			
CHARGE CONTROL				
Desulphation	Maintain charge up to 11V			
Soft Start	50% current rating up to 12.5V			
Bulk	12A up to 14.1V (GEL)	14.4(AGM)	14.7V(WET)	14.7V(CALCIUM)
Absorption	Constant voltage until current drops to 1.8A			
Analyse	Monitors voltage for 90 seconds			
Recondition	Constant current (1.8A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)			
Float	13.7V also with Maintain feature			
Maintain	12.6V- 14.1V,12-2A (GEL) 12.6V- 14.4V,12-2A (AGM) 12.6V- 14.7V,12-2A (WET) 12.6V- 14.7V,12-2A (CALCIUM)			
Efficiency	App.85%			
Ambient Temperature	-20°C to + 50°C, output power is reduced automatically at high temperatures			
Over Voltage Protection	The 12V charger will automatically supply protection if the voltage is higher than 17.5V.			
BATTERY RANGE				
Deep Cycle	90 - 150Ah			
Types of Batteries	Most types of lead acid batteries including WET, MF, Calcium, AGM, and GEL			
Dimension (L×W×H)	197 x 116 x 62mm			
Weight	1.1Kg			
Certifications	 			

* Specifications are subjected to change without prior notice.

P/No.	KACHG1220 - 12 Volt - 20 Amp			
Charger Type	8-Stage automatic			
Input Voltage	220-240V / 50Hz			
Input Power	554W			
Output Voltage	12V DC			
Output Current	20A			
Minimum Start Voltage	2V			
Back Drain	1mA			
Current Fuse Rating	250VAC, T5A			
CHARGE CONTROL				
Desulphation	Maintain charge up to 11V			
Soft Start	50% current rating up to 12.5V			
Bulk	20A up to 14.1V (GEL)	14.4(AGM)	14.7V(WET)	14.7V(CALCIUM)
Absorption	Constant voltage until current drops to 3A			
Analyse	Monitors voltage for 90 seconds			
Recondition	Constant current (3A) for 30 min or 4 hours limited to: 14.1V (GEL) 14.4(AGM) 16V(WET) 16V(CALCIUM)			
Float	13.7V also with Maintain feature			
Maintain	12.6V- 14.1V,20-2A (GEL) 12.6V- 14.4V,20-2A (AGM) 12.6V- 14.7V,20-2A (WET) 12.6V- 14.7V,20-2A (CALCIUM)			
Efficiency	App.85%			
Ambient Temperature	-20°C to + 50°C, output power is reduced automatically at high temperatures			
Over Voltage Protection	The 12V charger will automatically supply protection if the voltage is higher than 17.5V.			
BATTERY RANGE				
Deep Cycle	150 - 300Ah			
Types of Batteries	Most types of lead acid batteries including WET, MF, Calcium, AGM, and GEL			
Dimension (L×W×H)	217 x 116 x 62mm			
Weight	1.28Kg			
Certifications	 			

* Specifications are subjected to change without prior notice.

Settings are made by pressing the MODE-button (Press/Hold). After about two seconds the charger activates the selected program. The selected program will automatically default to the AGM Mode next time the charger is connected

STEP 1 - CHECK THE ELECTROLYTE LEVEL

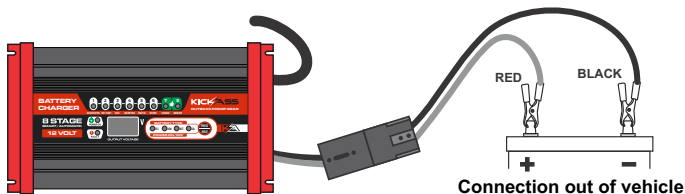
Please ensure to check the electrolyte level prior to charging the battery by removing the vent caps (not required on sealed & maintenance free batteries). The electrolyte level should be 6mm (1/4") above the battery's plates. If low, use distilled water to top up to the correct level and refit the vent caps.

STEP 2A - CONNECTING TO BATTERY OUT OF VEHICLE

Connect the RED Output Lead (Battery Clip from the charger to the Positive (+) Battery Terminal) and ensure a good connection is made.

Connect the BLACK Output lead (Battery Clip from the charger to the Negative (-) Battery Terminal) and ensure a good connection is made.

Alternatively if connecting via the Chargers Output Plug, make sure the external plugs polarity is correct before connecting.



STEP 2B - CONNECTING TO THE BATTERY IN VEHICLE

Before connecting, determine if the vehicle is Negative (-) or Positive (+) Earthed. Negative earthed vehicles are most common and use the chassis as an Earth by connecting the Battery Negative Terminal to a conductive chassis point.

The purpose of connecting the charger through the chassis is to eliminate any power spikes going through the vehicles sensitive electrical system.

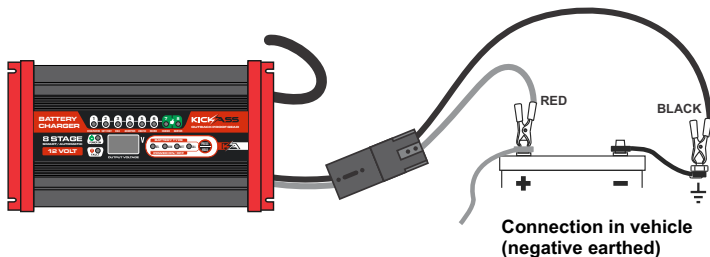
If you are unsure, please seek advice from a qualified person before connecting.

NEGATIVE EARTHED CONNECTION (Most Vehicles)

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Connect the RED Output Lead (Battery Clip) from the charger to the Positive (+) Battery Terminal and ensure a good connection is made.

Connect the BLACK Output Lead (Battery Clip) from the charger to a clean conductor point on the vehicle's chassis away from any fuel lines or moving parts.

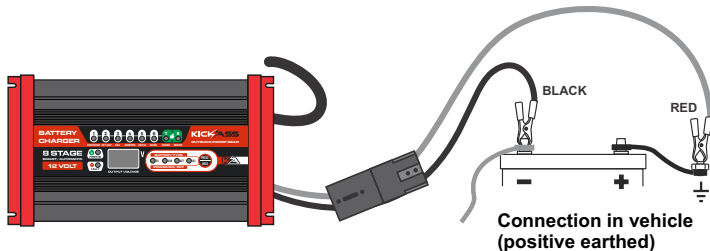


POSITIVE EARTHED CONNECTION

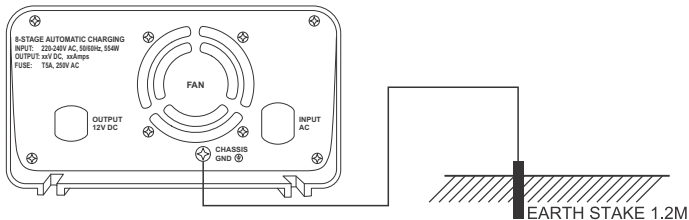
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Connect the BLACK Output Lead (Battery Clip) from the charger to the Negative (-) Battery Terminal and ensure a good connection is made.

Connect the RED Output Lead (Battery Clip) from the charger to a clean conductor point on the vehicle's chassis away from any fuel lines or moving parts.



The chassis earthing terminal should be connected to an earthing point which will be depending on where the battery charger is installed. In a vehicle, connect the chassis ground terminal to the chassis of the vehicle. In a boat, connect to the boat's grounding systems. In a fixed location, connect to an earth stake. This connection is not essential but may increase efficiency.



STEP 3 - CONNECT TO 220-240V AC MAINS POWER

Connect the battery charger to a certified 220-240V AC mains powered socket and turn on the mains power.

STEP 4 - CHARGING PROCESS

During the charge process, the 'Charging' and 'Stage' LED's will flash various patterns. This is normal and indicates the various charging stages. Refer to "How do I know what stage the battery charger is in" in the FAQ section, page 18.

When the 'Stage' LED remains on (this is known as the Float Stage) the charger can be left connected to the battery indefinitely without over charging. Alternatively, the battery can be disconnected at this point as it is fully charged. If the 'Power On' LED is flashing, there is a fault; refer to "Fault Codes" explanation on page 17 of this manual.

STEP 5 DISCONNECTING THE CHARGER FROM BATTERY

Ensure the 220-240V AC mains switch is turned off and the charger is disconnected from the 220-240V AC mains power.

Battery out of vehicle:

Remove the BLACK Output Lead (Battery Clip) from the Negative (-) Battery Terminal.

Remove the RED Output Lead (Battery Clip) from Positive (+) Battery Terminal.

Battery in vehicle

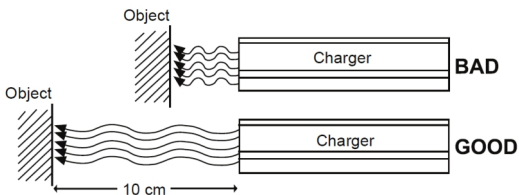
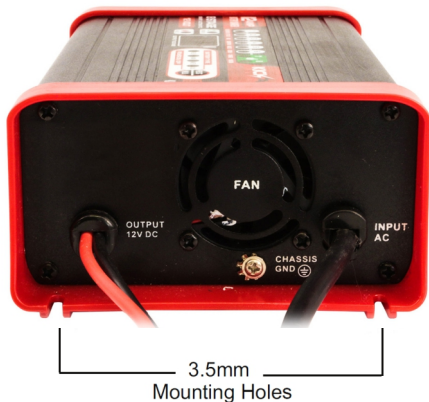
Remove the Output Lead (Battery Clip) from the chassis connection.

Remove the Output Lead (Battery Clip) from the Battery Terminal.

This 8-stage charger is designed for indoor use only and not outdoor conditions (rain and moisture). Ensure that both the charger and battery are in a well-ventilated area during charging.

If permanently fixed, the charger should be mounted to a suitable vertical or horizontal panel, with at least 10cm clearance from the end plates to provide adequate ventilation for the cooling fan.

The battery charger is molded with end plates that include a mounting flange for easy mounting.

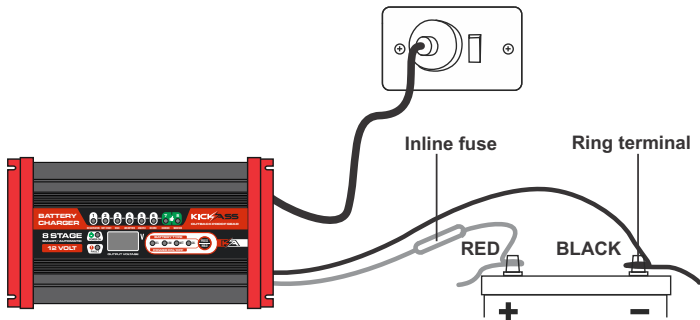


If required, It is possible to hard wire the DC charging Output Leads to the battery for permanent installations.

You will need an Adaptor Lead with Ring Terminals, Fuse, Fuse Holder and a suitable Plug to attach to the current Charger Plug.

Alternatively, if you would like to install this yourself please follow the steps below:

1. Cut off the supplied battery clips; ensure you leave sufficient cable to reach the battery terminals. (DO NOT extend the battery charger DC output cables, as the added voltage drop will cause incorrect charging).
2. Fit a ring terminal to the BLACK Negative (-) wire.
3. Connect the In-line fuse to the RED Positive (+) wire.
4. Connect a ring terminal to the other end of the in-line fuse.
5. Connect the RED Output Lead (with in-line fuse and ring terminal) to the Positive (+) battery post.
6. Connect the BLACK lead (with ring terminal) to the Negative (-) Battery Terminal.
7. Fit the correctly rated fuse. (Recommended: Double the chargers current rating)



If the charger is used in a Permanent / Hard Wired application and the vehicle will not be used for extended periods of time, it is best to leave the charger connected to mains power (turned 'On') so that it can maintain and keep the the battery fully charged.

Ensure any modification to the 220-240V AC mains lead is carried out by a qualified person and that connection to mains supply is in accordance with the National wiring rules.

BATTERY SIZE	CHARGER	SKU	CHARGING TIME
12V 90 - 150 Ah	12 Amp	KACHG1212	7-24 Hours
12V 150 - 300 Ah	20 Amp	KACHG1220	7-24 Hours










Please Note:

It is recommended to use a charger with an output of at least 10% of your total Battery Amp Hour Capacity.

(Example - 120Ah Battery is Recommended to have at least a 12 Amp Charger)

The 8 Stage Charger Technology features high quality internal sensing components to determine any issues with the battery or charger. Various Fault Codes will be displayed on the charger for reference.

The Fault Codes will be displayed in the following way:

Error Code	Power On LED	Stage LED	Fault LED	Cause	Remedy
Reverse Polarity / Output Short		—	—	Short circuit or reverse connection of the clips	Check clips are not touching each other OR Check the clips are correctly connected to the battery.
Non Battery Link		—	—	Non battery link	Please choose the correct battery type for connection. Charger is NOT a Power Supply.
Faulty Battery		 Stage 3 (LED)		Bulk charging has timed out and stopped after 24 hours.	Battery is faulty and may need to be replaced. Please get tested by a Qualified Person
Over Voltage		—		12V battery: Voltage is above 17.5V.	Disconnect the charger and check the battery voltage. This charger is suitable for 12V Batteries only.
Over Temperature		—		Internal Temperature is too high	Turn off charger and allow to cool. Ensure there is adequate Ventilation

Q. How do I know if the battery is charged?

A. The charger's 'Charged' and/or 'Maintain' LED (Stage 7/8) will be illuminated (solid). Alternatively use a Battery Hydrometer (if caps are removable). A reading of 1.250 or more in each cell indicates a fully charged battery.

Q. I have connected the charger properly but the 'STAGE LED' does not come on?

A. In some cases, batteries can be discharged to the point where they have very little or no voltage (Not recommended and may void warranty). This can occur if a small amount of power is used for a long time, for example: An interior light is left on for an extended period of time or an electrical appliance without a 'voltage cut-out' is unknowingly connected.

Q. What minimum voltage will the charger need to sense?

A. Although a battery is not designed to be discharged below 10.5 Volts (12 Volt System) under load, the 8-Stage chargers are designed to charge from as little as 7.0 Volts (12V charger). If the battery voltage is lower than this, use a pair of booster cables to connect an external battery with the same voltage in parallel. This should provide more than the required volts to the battery being charged. The charger can then start to charge the battery and the booster cables can be removed.

Q. Can I use the charger as a power supply?

A. 8-Stage chargers are designed to supply power to the battery clips Only, when they are connected correctly to a battery. This is to prevent sparks during connection to the battery or if connected incorrectly by mistake. This safety feature prevents the charger from being used as a 'Power Supply'. No Voltage will be present at the clips until connected to the battery.

Q. How do I know what stage the battery charger is in?

A. Below are the conditions that are displayed by the 'Stage' LED for each of the charge stages:

	①	②	③	④	⑤	⑥	⑦	⑧
	Desulphation	Soft Start	Bulk	Absorption	Analyse	Recondition	Float	Maintain
Stage								

Q. What if I have a question that has not been answered?

A. Please contact the supplier for any further questions or advice.

CAUTION

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ALWAYS PLACE THE BATTERY CHARGER IN AN ENVIRONMENT WHICH IS:

- A. WELL VENTILATED.
- B. NOT EXPOSED TO DIRECT SUNLIGHT OR HEAT SOURCE.
- C. OUT OF REACH FROM CHILDREN.
- D. AWAY FROM WATER / MOISTURE, OIL OR GREASE.
- E. AWAY FROM ANY FLAMMABLE SUBSTANCE.
- F. SECURE WITH NO RISK OF FALLING.



SAFETY

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The charger is designed for charging 12V Lead-Acid, AGM, Gel and Calcium Batteries. Do not use the charger for any other purpose.

- ◆ Check the charger cables prior to use. Ensure that no cracks have occurred in the cables or in the battery clips. A charger with damaged cables or clips must not be used. A damage cable or clip must be replaced by a professional representative.
- ◆ Never charge a damaged battery.
- ◆ Never charge a frozen battery.
- ◆ Never place the charger on top of the battery when charging.
- ◆ Always allow for adequate ventilation during charging.
- ◆ Avoid covering the charger.
- ◆ A battery being charged could emit explosive gases. Prevent sparks close to the battery. When batteries are reaching the end of their life-cycle internal sparks may occur.
- ◆ All batteries fail sooner or later. A battery that fails during charging is normally taken care of by the charger's advanced control, but some rare errors in the battery could still exist. Don't leave any battery during charging unattended for an extended period of time.
- ◆ Ensure that the cabling is not obstructed or come into contact with hot surfaces or sharp edges.
- ◆ Battery acid is corrosive. Rinse immediately with water if acid comes into contact with skin or eyes, seek immediate medical advice.
- ◆ Batteries consume water during use and charging. For batteries where water can be added, the water level should be checked regularly. If the water level is low, add distilled water.
- ◆ This appliance is not designed for use by children or people who cannot read or understand the manual unless they are under the supervision of a responsible person to ensure that they can use the battery charger safely. Store and use the battery charger out of the reach of children, and ensure that children cannot play with the charger.
- ◆ Connection to the mains supply must be in accordance with the national regulations for electrical installations.



From the **KICK ASS** Team,
OUTBACK PROOF GEAR
Thank You For Your Purchase!