

HULK
PROFESSIONAL SERIES



User Manual

For Lead Acid Batteries

12V/24V

Battery
Charger

HU6556

Charging Current
15 Amp

Battery Capacity
30-250Ah

9 Step
Charging

User's Manual And Guide To Professional Battery Charging

For Your Safety

This manual contains important safety and operating instructions. Read this manual carefully before using the charger for the first time and keep the manual in a safe place for future reference.

Safety Information

- **HULK Professional 15A Battery Charger** is designed for charging Lead acid rechargeable batteries 50-250Ah (12V), 25-120Ah (24V) and Lead-Calcium batteries 25-100Ah (12V).



WARNING! DO NOT ATTEMPT TO CHARGE A NON-RECHARGEABLE BATTERY (PRIMARY CELLS).

- Before charging make sure the input power is as per rated specifications, otherwise the charging performance may be seriously affected.
- **Do not** use the charger with a damaged cable. It must be replaced by the manufacturer, its service agent or similarly qualified technician in order to ensure safety.
- Never charge a damaged battery.
- Never charge a frozen battery.
- Never place charger above battery being charged, gases from battery will corrode and damage charger.
- **Do not** cover the charger while charging.
- During charging the battery must be placed in a well ventilated area.
- While charging always use safety glasses, gloves, protective clothing and keep your face away from the battery.

- **Explosion hazard!** A battery being charged could emit explosive gasses. Avoid smoking or open sparks or flames in the vicinity of the battery. Explosive and flammable substances such as fuel or solvents should not be kept in the vicinity of the charger or the battery.
- **Danger of chemical burns!** Battery acid is highly corrosive. If your skin or eyes come into contact with acid, immediately rinse the affected part of the body with excessive water and seek medical advice.
- All batteries eventually fail. If that happens during charging, charger's advance control system will detect it, but there may some rare errors still exist in the battery, so do not leave charging unattended for a long period of time.
- Normally, a battery is grounded either, on negative or positive terminal to the vehicle's chassis. The charger's DC Clips are to be connected to the battery terminal not connected to the chassis first. The other connection is to be made to the terminal connected to the chassis, far from the battery and fuel line. The battery charger is then to be connected to the power supply.
- After charging, disconnect the battery charger from supply mains. Remove the chassis connection and the battery connection, respectively. This will reduce back drain current.
- Keep away from children

Contents

- 1) HULK Professional 15A Battery Charger
- 2) Quick connect 1.8m long battery leads with heavy duty clamps or Quick connect 1.8m battery leads with eyelet terminals (Ø 8.5mm)
- 3) 1.85m long Cable with temperature sensor
- 4) User Manual

Product Feature

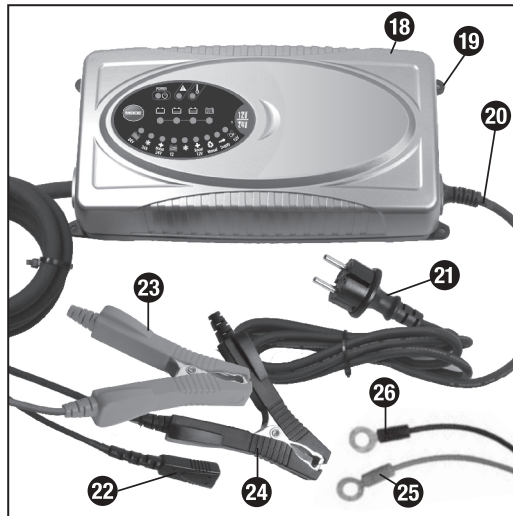
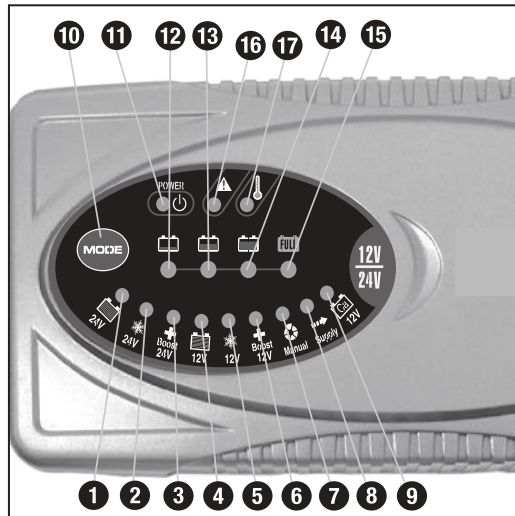
Memory Function: The charger has a unique memory function. The charger returns to last selected mode automatically when power is switched on (*this feature is unavailable for SUPPLY and BOOST modes*). For repetitive charging, this is a very useful feature. However a different charging mode could be selected by pressing the "MODE" button.

Spark protection mechanism: The charger will not begin operation upon connection to the battery unless charging mode has been selected. This embedded feature eliminates the possibility of a spark that often appears during connections.

Boost mode: Recovers severely discharged batteries under high voltage charge. Recommended to boost batteries at least once a year.









Supply mode: Constant voltage output. Spark free function is inactivated but reverse polarity protection still works.

Charger Indication



Charging Modes

Indication	Symbol	Description
1		Mode 1 - 24V/7.5A This mode is used for WET, MF, VRLA, EFB and GEL batteries.
2		Mode 2 - Cold 24V/7.5A This mode is recommended for AGM batteries. It is also applied for charging batteries in sub-zero temperatures.
3		Mode 3 - 32V/1.5A BOOST This mode is suitable to recover severely discharged batteries.
4		Mode 4 - 12V/15A This mode is used for WET, MF, VRLA, EFB and GEL batteries.
5		Mode 5 - Cold 12V/15A This mode is recommended for AGM batteries. It is also applied for charging batteries in sub-zero temperatures.
6		Mode 6 - 16V/1.5A BOOST This mode is suitable to recover severely discharged batteries.
7		Mode 7 - 13.6V/10A This mode is suitable for manually maintenance of 12V batteries. This is for applications where maximum capacity from the battery is required such as Golf Carts, Floor Sweepers etc. This mode would not work, if battery is not connected with the charger.
8		Mode 8 - 13.6V/10A Power Supply special Mode without attaching a battery.
9		Mode 9 - 16V/5A This mode is used for Calcium batteries.

Indication	Symbol	Description
10		"Mode" selection button
11		Yellow LED on for "POWER". In case of open circuit, short circuit or reverse connection, LED lights up
12		Red LED flashes "on-off" cycle in 0.5 second "Diagnosis" Red LED flashes "on-off" cycle in 1 Hz (below 25%) "Recovery"
13		Red LED flashes "on-off" cycle in 1 Hz (below 50%) "Bulk"
14		Red LED flashes "on-off" cycle in 1 Hz (below 75%) "Bulk"
15		Green LED flashes "on-off" cycle in 1 Hz (below 100%) "Absorption" Green LED always ON "Fully charged" "Maintenance"
16		Red LED indicates "Incorrect polarity / Fault"
17		Red LED displays temperature compensation when the temperature is above 35°C or below 10°C.
18		Charger
19		Mounting Holes
20		1.8m Mains Rubber insulated cable 2 x 1.00 mm ² , cable diameter 6.4mm ²
21		Power plug
22		1.85m Cable with Temperature Sensor for Temperature Compensation
23		1.8m "+" Pole connection cable (red) with quick clamp (red)
24		1.8m "-" Pole connection cable (black) with quick clamp (black)
25		1.8m "+" Pole connection cable (red) with ring terminal
26		1.8m "-" Pole connection cable (black) with ring terminal

- 1) Charging of a permanently installed battery in a vehicle
 - a) Before connecting or disconnecting the battery leads, the power cord should be removed from the mains.
 - b) Check polarity of the battery post. A positive ("+") battery post usually has a larger diameter than a negative ("-") post.
 - c) Identify the pole of battery which is connected to the chassis (earth). Normally the negative terminal is connected to the chassis.
 - d) **Charging of negatively earthed battery:**
 - Connect the red (+) clamp to the positive (+) terminal of the battery.
 - Connect the black negative (-) clamp to the vehicles chassis away from the fuel line or any moving parts.
 - e) **Charging of positively earthed battery:**
 - Connect the black negative (-) clamp to the negative (-) terminal of the battery.
 - Connect the red positive (+) clamp to the vehicles chassis away from the fuel line or any moving parts.

- 2) Charging of a battery not connected to a vehicle
 - a) Before connecting or disconnecting the battery leads, the power cord should be removed from the mains.
 - b) Connect the red clamp or eyelet terminal ("+") to the positive ("+") pole of the battery and the black clamp or eyelet terminal ("-") to the negative ("-") pole.
- 3) Connect charger to the mains.
- 4) Select charging mode
Charger automatically detects 12V or 24V batteries.





For 24V batteries

By pressing **MODE** button once, Standard, Cold or BOOST charge options can be selected.

For 12V batteries

By pressing the **MODE** button once, Standard, Cold, NIGHT, BOOST or MANUAL charge options can be selected. Press **MODE** button for 3 seconds to change to special modes. It enters calcium mode directly when charger is connected with battery or it enters supply mode directly if it is not connected with battery.

Charging Status Indication

 12	 13	 14	 15	Charging Status	Charging Phases
FLASH	OFF	OFF	OFF	Below 25%	Diagnosis & Recovery
ON	FLASH	OFF	OFF	Below 50%	Bulk
ON	ON	FLASH	OFF	Below 75%	Bulk
ON	ON	ON	FLASH	Below 100%	Absorption
ON	ON	ON	ON	FULL	Maintenance

Bulk Charging Time

Battery Size (Ah)	For about 80% Charge (hours)		
	12V	24V	12V Calcium
25		8.5	13
50	8.5	16.5	25.5
75	12.5	25	38
100	16.5	33,5	50.5
150	22	45	
200	33.5		
250	41.5		

Note: Above table is for reference only. Actual data may differ due to battery condition.

Technical Data

MODEL	15 Amp
Input Voltage AC	220 - 240VAC, 50/60Hz
Output Voltage	Nominal: 12V / 24V
Input Current	2A RMS max
Minimum Battery Voltage	> 4.5V
Output Power	192W
Efficiency	> 75%
Charging Current	15A for 12V battery • 7.5A for 24V battery • 5.0A for Calcium battery
Back Current Drain*	< 5 mA
Cooling	Fan
Ambient Temperature	0°C to +40°C Reduced output power at higher temperature
Type of Charger	9-step, fully automatic, switch mode with maintenance charging
Type of Batteries	12V/24V Lead-acid rechargeable batteries (WET, MF, VRLA, AGM, EFB and GEL) 12V Lead-Calcium
Battery Capacity	12V: 50Ah-250Ah • 24V: 25Ah-120Ah • 12V Calcium: 25-100Ah
Dimensions (L x W x H)	260 x 135 x 70mm
Housing Protection	IP44 (Splash proof) Outdoor use
Weight	1.82kg
Noise Level	< 50 dB (Tested from a distance of 50cm)

* = Back current drain is the amount of current drawn by the charger from battery, when the charger is connected to the battery, without power cord connected.

HULK Professional 15A Battery Charger has extremely low back current drain.

HULK Professional 15A Battery Charger performs 9-step fully automatic charging cycle.

1) Diagnosis & Recovery:

The unique diagnostic function checks status of battery. If a deeply discharged battery's voltage is over $4.5V \pm 0.10V$ (for 12V battery) or $16V \pm 0.32V$ (for 24V battery), charger begins pulse charging with 5.0A high current and 1.5A low current to recover it, which terminates when voltage reaches to $10.5V \pm 0.25V$ (for 12V battery) or $21V \pm 0.42V$ (for 24V battery). If within 7 hours voltage of battery does not rises to $10.5V \pm 0.25V$ (for 12V battery) or $21V \pm 0.42V$ (for 24V battery), charging process is terminated and battery is treated as bad battery.

2) Bulk:

80% of energy is returned in this phase with maximum charging current.

3) Absorption:

With use of constant low charging current, charging up to almost 100% is achieved.

4) Analysis:

Checks status of charge. If battery does not retain energy, it must be replaced.

5) Trickle Charge:

Battery is fully charged and ready to use. The battery is maintained at maximum level by applying low current charge.

6) Maintenance Charge:

If the battery is loaded and/or terminal voltage falls below 25.6V (for 24V battery) or 12.8V (for 12V battery), the charger starts maintenance charging pulse at constant 1.5A until voltage reaches to 28.8V (for 24V battery), 14.4V (for 12V battery) or 16.0V (for 12V Lead-Calcium battery). Now maintenance charging is discontinued.

Cycle of trickle charging and maintenance charging is repeated indefinitely to keep battery in good condition when it is not in use and enables charger to be left connected indefinitely.

7) Boost:

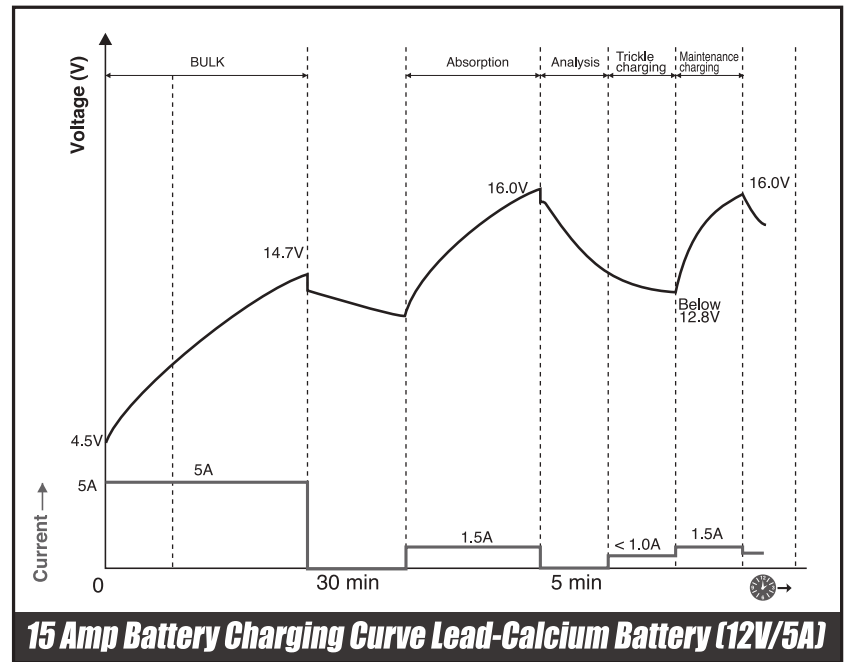
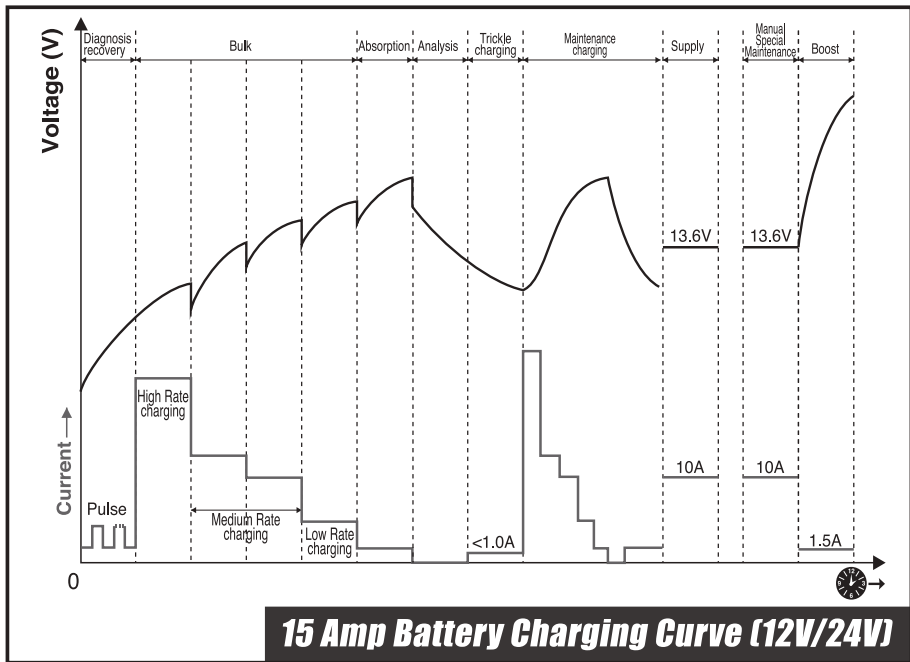
High voltage charging at 1.5A is applied for a maximum period of 4 hours.




8) Manual Special Maintenance:



Float charge with constant voltage of 13.6V and current up to 10A. Charger features electronic overload protection, which activates if battery voltage falls below 4.5V. In this situation charger returns to Standby mode.

9) Supply:

Used as a power supply with maximum capacity of 13.6V/10A. If output voltage drops to 12.0V or below, charger shall cut off output power and returns to Standby mode.

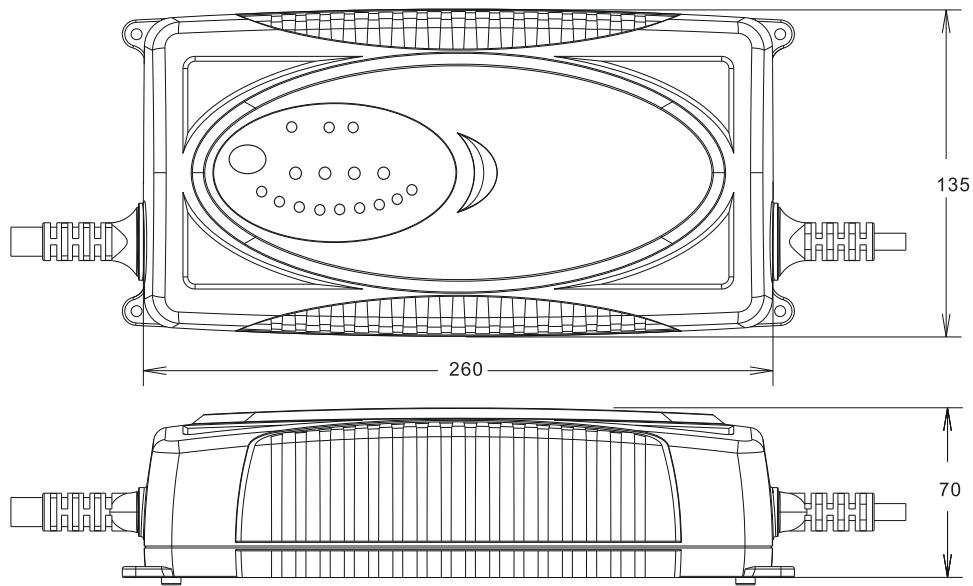


Problem	Indication	Possible Cause	Solution
Charger does not work	Indicator lights are not on	No AC power	Check AC connections and make sure mains is switched on
Charger has no DC output	 or 	a) Battery is connected with reverse polarity poles b) Output is short circuited c) Poor contact from charger to battery	a) Check DC connection between charger and battery and make sure they are not short circuited b) Check if clamps or ring connectors are connected to the correct polarity c) Check if connectors are not greasy or corroded and making a clean connection and there are no loose or damaged connection
No charging current		a) Battery may be defective / excessive current draw b) Battery may be severely sulfated	a) Check battery condition b) If battery can not be de-sulfated, it must be replaced

Problem	Indication	Possible Cause	Solution
Battery is not retaining charge		Battery is not retaining charge a) After analysis if voltage is less than 12.3V (for 12V battery) and 24.6 (for 24V battery) b) During boost mode if voltage does not raise to 13.6V within 4 hours (for 12V battery) and 27.2V within 2 hours (for 24V battery)	Replace the battery
Excessive charging time		a) Wrong battery type selected b) Battery capacity too large c) Charger is in recovery mode for over 7 hours d) Charger is in bulk and absorption mode for over 41 hours	a) Check battery type selection b) Battery cannot be charged and must be replaced

Mounting & Product dimensions

The charger is easy to fix using four screws. Please refer to product drawing.



Application



Car



Boat



RV



Truck



Dump Truck



Tractor



Wheel Loader



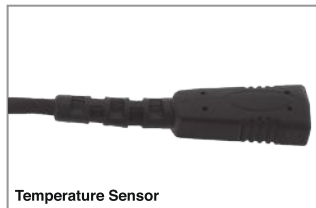
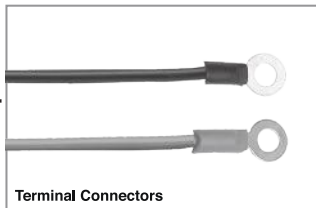
Excavator

Equipment


HULK Professional 15A Battery Charger is supplied with colour coded lead with heavy duty clamps for bench charging.
Or with colour coded lead with eyelet terminals (Ø8.5mm) for permanent attachment to the battery posts.
The charger is also equipped with a temperature sensor.



or



Declaration of Compliance

Tested and approved by  and conforms to -
EN60335-1
EN60335-2-29
EN55014-1
EN55014-2
EN61000-3-2
EN61000-3-3
EN62233.

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