



USER'S MANUAL

**BATTERY CHARGERS
HIGH 400 / GBC400**








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





Please read this User's Manual thoroughly before using the charger.








I PRODUCTS OVERVIEW

Like all other products from SMARTER, this item was developed on the basis of state-of-the-art, engineering and using the most reliable and modern electrical/electronic components, it is tiny, high-efficiency as well as energy-saving; the charger can be used to charge for battery with either 12V or 24V and can adjust the current through changeable switch (scale or small) according to capacity of battery; the charger is designed for 12V and 24V lead-acid battery. The quality of the charger is reliable; it can be popular used in family, store etc. Auxiliary function for start-up, it can be used for charging and starting the lead-acid batteries and batteries for motorcycles, automobiles, tractors and ships.

II. TECHNICAL PARAMETERS

	HIGHER-400	IP20	cl H	C min 20Ah
	U ₁ 220V~1ph 50/60Hz	CHARGE 12V  40A CHARGE 24V  40A		
	P. MAX CHARGE 1.2KW	START 12V  240A(1V/e) START 24V  240A(1V/e)		
	P. MAX START 8KW			
EN 60335-2-29	 FUSE T16A	3s ON/120s OFF-5cycle		

	HIGHER-600	IP20	cl H	C min 20Ah
	U ₁ 220V~1ph 50/60Hz	CHARGE 12V  60A CHARGE 24V  60A		
	P. MAX CHARGE 2.0KW	START 12V  560A(1V/e) START 24V  560A(1V/e)		
	P. MAX START 12KW			
EN 60335-2-29	 FUSE T20A	3s ON/120s OFF-5cycle		

	HIGHER-500	IP20	cl H	C min 20Ah
	U ₁ 220V~1ph 50/60Hz	CHARGE 12V  50A CHARGE 24V  50A		
	P. MAX CHARGE 1.6KW	START 12V  360A(1V/e) START 24V  360A(1V/e)		
	P. MAX START 10KW			
EN 60335-2-29	 FUSE T20A	3s ON/120s OFF-5cycle		

EN60335-2-29: Standards for charger

 : Single-phase transformer-rectifier

 : Symbol of battery

 : Read the User's Manual carefully before using.

 : Indoor use only

IP20: Protection class

I_{min}: DC Min output current

I_{boost}: DC Max output current

 : Start

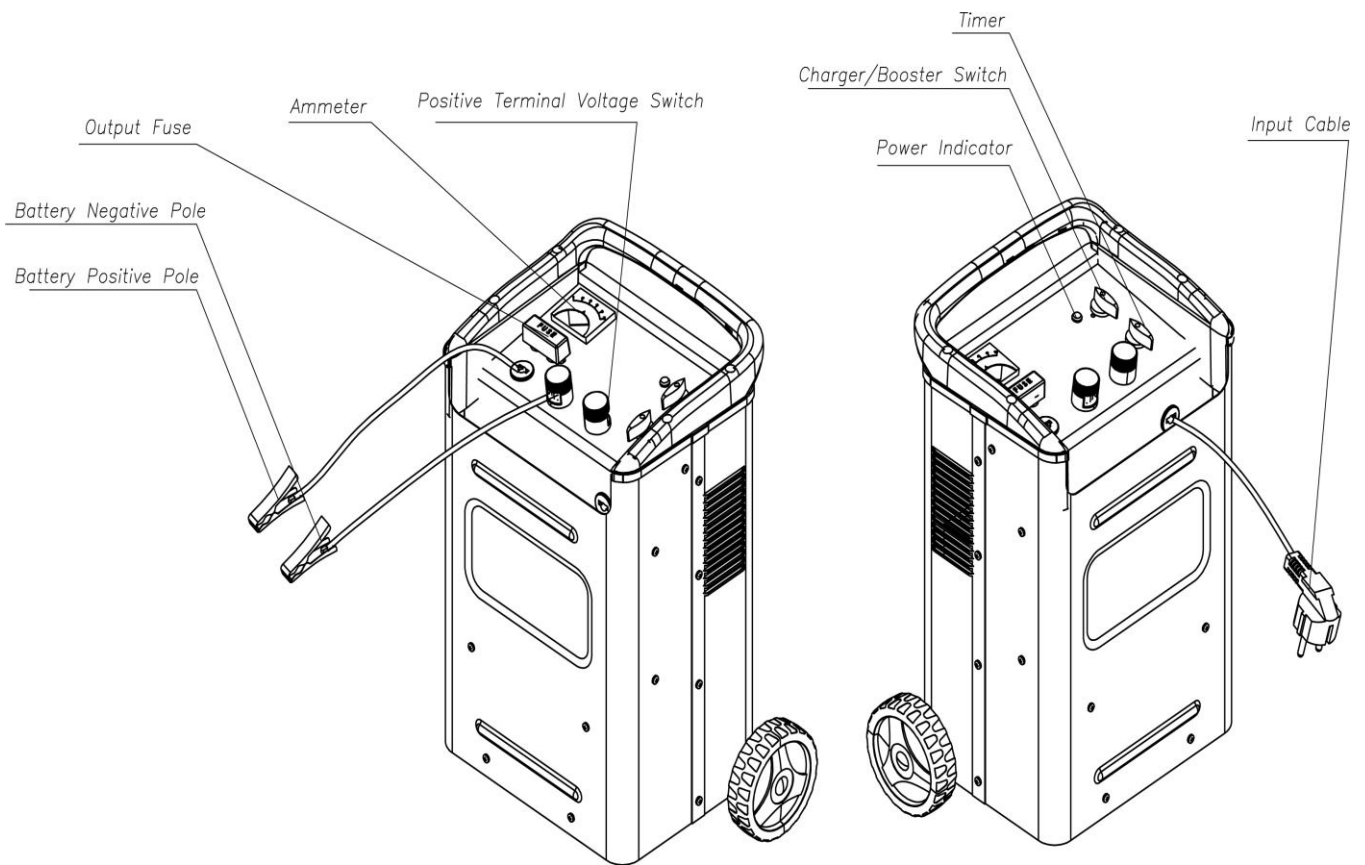
IV. SAFETY REGULATIONS

For the safety of persons and properties, the following safety regulations must be observed when the charger is used.

- As the flammable gas can be generated in the course of charging, the battery should be charged inside the room with good ventilation. Flames and sparks should be kept away and smoking is prohibited.
- For the protection class is IP20, the product shall not be used outside the room, where it is the rainy and snowy.
- The grounding wire must be connected to the socket so that the pin for grounding inside the plug can be reliably earthed.
- In the course of charging, the charger should be put at a level place and should not be tilted or reversely placed.

- As the casing can generate heat during charging, it is prohibited to cover the vent of casing.
- The instructions for the battery and transportation tools should be strictly followed in the course of charging.
- The battery should be mounted or dismantled after the power is turned off.
- The maintenance work for the charger should be done by the professionals.
- The fuse and cable with the same specifications should be used when they need to be replaced.
- As sulfuric acid gas, hydrogen and oxygen, which are strongly erosive, can be generated in the course of charging, the battery should be charged inside the room with good ventilation. Flames and sparks should be kept away and smoking is prohibited.
- The power socket should be connected with the grounding wire so that the pin of power cord can be reliably earthed.
- The battery should be mounted or dismantled after the power is turned off.
- When electrified, the battery clamps should not be contacted with each other.
- The cover of battery should be opened in the course of charging.
- It is prohibited to connect the battery clamps reversely. (e.g., wrongly connect the red clamp of anode to the cathode of battery, or wrongly connect the black clamp of cathode to the anode of battery)
- It is prohibited to use the charger for the charging of non-charging batteries.
- The fuse with the same specifications as the original configuration should be used when they need to be replaced. Do not use other conductors to replace the fuse.
- In case the power cable is damaged, the damaged cable should be dismantled and replaced by professionals for maintenance.

V OPERATION INSTRUCTIONS



The Skeleton diagram

To ensure that the charger and battery are used correctly and the machine is kept from damage, the following rules must be followed:

1. Operation instructions for the battery

- When battery does not have sufficient electricity, the terminal voltage of it can be normal, which means the 12V battery has the terminal voltage of 12V and the 24V battery has the terminal voltage of 24V. The main physical phenomenon, which indicates the insufficient electricity in the battery, is the change of the specific gravity of the battery solution. Normally, when the specific gravity of the battery solution is 1.28KG/L, the electricity volume of battery is sufficient. If it is lower than 1.16KG/L, the battery is empty and won't have any electricity.
- The voltage of battery can be deviated from the normal value only when the battery is loaded or charged. When loaded, the voltage is lower than normal value

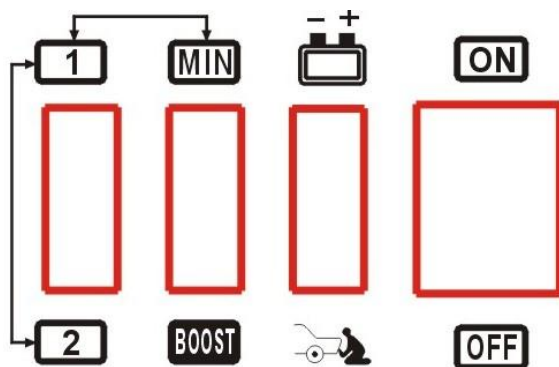
of terminal voltage, whereas it is higher than normal value when the battery is being charged. If the battery is topped for some time (about 10-30 minutes) after it is loaded, and the terminal voltage is still lower than normal value, the battery may have quality defects.

- Remove the cover of the battery to see if the electrolytic solution in it is sufficient.

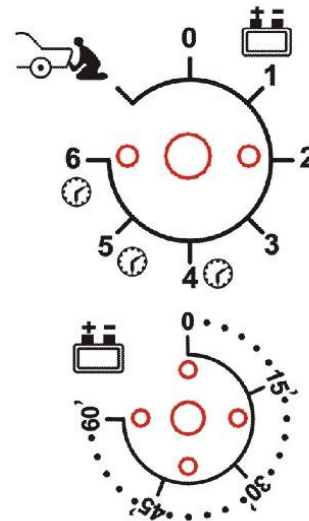
If not, add more distilled water into it till it is sufficient so as to make it prepared for charging.

- As the electrolytic solution in the battery is dilute sulfuric acid and strongly erosive, it can't contact the skin or clothes. In case the electrolytic solution has contacted the skin, the contacted area should be washed with water immediately and the contacted person should be sent to the hospital for medical treatment timely.

2. Correct charging method

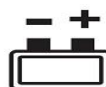


1. The operation panel of CHS -400



2. The operation panel of CHS-500 CHS-600

1. Connecting the batteries: Connect the (red) anode of battery clamp to the anode of the battery and the corresponding terminal (12V or 24V) of the charger. Connect the (black) cathode of battery clamp to the cathode of the battery. If the battery of the car needs to be charged, first you should connect the charger to the terminal which is not connected with the chassis, then connect the other terminal of charger to the chassis. The connecting points must be far away from the battery and fuel tubes.



2. Select the mode switch to the charge position .
3. Connect the mains cable and set the switch to "ON" position .

4. There are options of charging speed which could be carry out by “MIN” “MIN +1” “BOOST” “BOOST+2” Switch for the item HIGHER-400 .
5. There are options of charging speed which could be carry out by selceting “1”to “6” position for the item HIGHER-500 ,HIGHER-600 .
6. There also timer function for item HIGHER-500 ,HIGHER-600 when you selcet the “4” “5” ”6” position .
The charge timer can be set to boost charge time up to 60 minutes .
7. After the charging is finished, the power should be turned off first, and then the battery clamp should be removed from the battery.

3. Correct starting method

Waring : The starting function must pnly be used when a battery dosen't have enough energy to make the starter motor rotate .

To use the start function :

- 1.Ensure that the power to the charger is switched OFF .
2. Connecting the batteries: Connect the (red) anode of battery clamp to the anode of the battery and the corresponding terminal (12V or 24V) of the charger. Connect the (black) cathode of battery clamp to the cathode of the battery.



3.Set the mode to start position

4.Turn the charge ON and start the vehicals immediatly with the follwing procedure :

The start time for each time is 3 seconds each time ; the start for the second time should be 120 seconds later. Five times of cycled start are available. If the engine is continuously started, 10 minutes of interval must be ensured between two start cycles so that the transformer inside the device can be cooled for restarting the engine.

5. After the charging is finished, the power should be turned off first, and then the battery clamp should be removed from the battery.

VI MAINTENANCE

- Regular maintenance and repair work can ensure the machine is properly used and its condition complies with the safety requirements.
- Any improper or incorrect operation may cause the failure and damage for the machine.
- The warranty period for the machine is one year commencing from the date of purchasing. Within this time, users can take the machine with the invoice to the distributor or the designated department for repair.
- Before the maintenance work for machine is started, the operator must turn off the main power at power distribution cabinet and the power switch of the machine.
- If the transformer is heating and no current is available from the transformer due to the over current in the course of charging, it is because the over-heat protection device inside the charger is started to protect the transformer. In this case, the user should wait till the transformer is cooled to resume the charging process.