

### **VERY IMPORTANT!!!**

**If battery is discharged completely repeatedly, it will greatly reduce the life of the battery. When the LED light turns red, shut it down! If you do completely discharge the battery, wait 6 hours before plugging into the charger or you will damage both the battery and charger.**

### **ALSO**

**Battery should always be stored fully charged and at room temperature. Once a month, put battery on charger to make sure it is fully charged.**

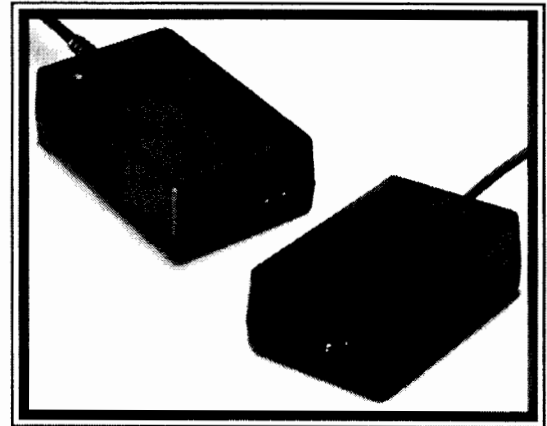


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Doc. # 410060-0030 11/1/04

## **User Manual**



**Lead Acid Charger  
452040-S and 459940-S Series**



**CELL-CON**

### READ THESE INSTRUCTIONS BEFORE USING THE CHARGER

The battery charger is only designed for indoor use and should not come into contact with water or dust. In order to avoid overheating, the charger should not be covered when it is in use.



Chargers filled with molding material are splash-proof, but must not be immersed in water over long periods of time.



The mains socket should be easily accessible. If an operational error occurs, the plug should be immediately removed from the socket.



In the event that the charger is labeled "EN60601-1", then it satisfies the requirements of electromedical equipment and can be used in hospital environments, etc. The charger must not be used in the vicinity of flammable anesthesia gases.

The charger contains dangerous voltages and the cover should not be removed. All service or maintenance work should be carried out by qualified personnel who can get assistance by contacting the manufacturer's agent.



Chargers will automatically be switched off if the battery is connected to the reverse polarity. The safety switch will be automatically switched back when the wrong polarity has been corrected.

The charger is designed for charging lead batteries. For safety reasons, individual battery types should have a minimum capacity. Recommended battery capacity: 12V 9-60Ah, 24V 4.5-30Ah. Contact the battery manufacturer for the specific battery. Do not attempt to charge batteries that are not rechargeable.

Caution: Old, sulphated batteries usually have a reduced capacity and are difficult to charge. The charge current will fall quickly as if the battery had received a full charge. Even though a battery in this condition should be replaced, it will retain a small charge.

If mounted in a vehicle, the charger can only be used when the vehicle is not in use.

**Technical specification: See product labeling.**

### HOW TO CHARGE BATTERIES

1. Check the electrolyte in the battery. If necessary, top off with distilled water up to 5-10mm over the plates.
2. The charger and battery should be placed in a well-ventilated area during charging. Do not connect the charger to the mains before it is connected to the battery.
3. Verify that the polarity is correct and connect the correct charger clips to the positive pole.
4. Connect the other charger clip to the battery's negative pole.
5. Connect the charger to the mains.
6. When charging is finished, disconnect the charger from the mains before you disconnect the charger clip from the battery's positive pole and the other from the negative battery pole, in this order.

### WARNING

Explosive gases can arise while charging. Avoid sparks and open flames. Verify that there is adequate ventilation while charging. The charger should not be used in the vicinity of flammable anesthesia gases. Avoid chargers with plastic casing coming into contact with oils, grease, etc., as most types of plastic can be broken down by chemicals and solvents.

### EXPLANATION OF CHARGE CYCLE

#### Boost

The charging current is at its maximum.  
The battery voltage is lower than the switching level of the timer.



#### Timer

The charger is in time-controlled mode.  
Charge current is lower than maximum.  
The battery is normally between 80-95% charged when the time-controlled mode starts (LED changes to Orange).  
The battery voltage is the same as the switch level from rapid charging. The charger remains in this mode until the time interval is completed.

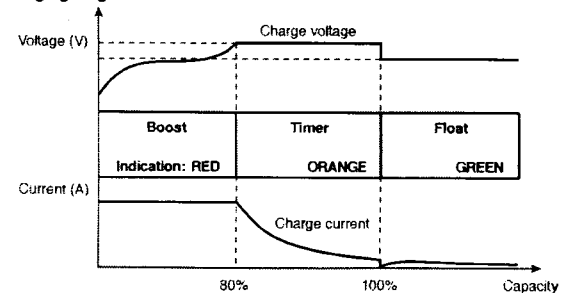


#### Float

The charger is in standby mode.  
The battery is fully charged. The LED changes to green.  
The charge voltage is at standby level, which means the charger can continue to be connected to the battery.  
The charger can return to rapid charging if the battery is used.



### Charging diagram



## **VERY IMPORTANT!!!**

**If battery is discharged completely repeatedly, it will greatly reduce the life of the battery. When the LED light turns red, shut it down! If you do completely discharge the battery, wait 6 hours before plugging into the charger or you will damage both the battery and charger.**

## **ALSO**

**Battery should always be stored fully charged and at room temperature. Once a month, put battery on charger to make sure it is fully charged.**

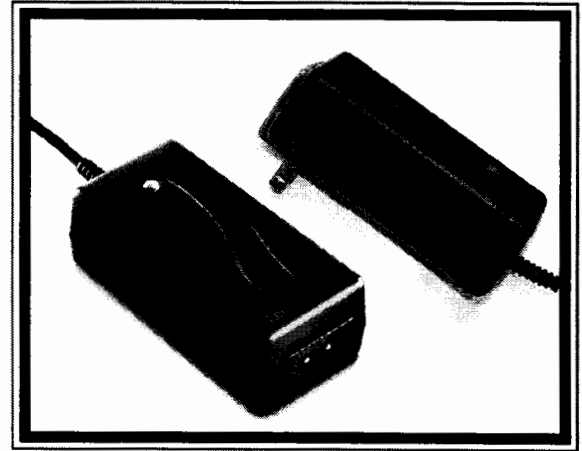


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# **User Manual**



**Lead Acid Charger  
452240-S, 452241-S Series**



**CELL-CON**

## READ THESE INSTRUCTIONS BEFORE USING THE CHARGER

The battery charger is only designed for indoor use and should not come into contact with water or dust. In order to avoid overheating, the charger should not be covered when it is in use.



Chargers filled with molding material are splash-proof, but must not be immersed in water over long periods of time.



The mains socket should be easily accessible. If an operational error occurs, the plug should be immediately removed from the socket.



In the event that the charger is labeled "EN60601-1", then it satisfies the requirements of electromedical equipment and can be used in hospital environments, etc. The charger must not be used in the vicinity of flammable anesthesia gases.

The charger contains dangerous voltages and the cover should not be removed. All service or maintenance work should be carried out by qualified personnel who can get assistance by contacting the manufacturer's agent.



A fuse protects the product against short circuiting and overloading.

The charger is designed for charging lead batteries. For safety reasons, individual battery types should have a minimum capacity. Recommended battery capacity: 6V 4-12Ah, 12V 3-12Ah, 24V 1.5-12Ah. Contact the battery manufacturer for the specific battery. Do not attempt to charge batteries that are not rechargeable.

Caution: Old, sulphated batteries usually have a reduced capacity and are difficult to charge. The charge current will fall quickly as if the battery had received a full charge. Even though a battery in this condition should be replaced, it will retain a small charge.

If mounted in a vehicle, the charger can only be used when the vehicle is not in use.

Technical specification: See product labeling.

## HOW TO CHARGE BATTERIES

1. Check the electrolyte in the battery. If necessary, top off with distilled water up to 5-10mm over the plates.
2. The charger and battery should be placed in a well-ventilated area during charging. Do not connect the charger to the mains before it is connected to the battery.
3. Verify that the polarity is correct and connect the correct charger clips to the positive pole.
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5. Connect the charger to the mains.
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## WARNING

Explosive gases can arise while charging. Avoid sparks and open flames. Verify that there is adequate ventilation while charging. The charger should not be used in the vicinity of flammable anesthesia gases. Avoid chargers with plastic casing coming into contact with oils, grease, etc., as most types of plastic can be broken down by chemicals and solvents.

## LED's INDICATE FOLLOWING CHARGE STATUS

### Fast charge

The charger is in constant current mode.  
Charge current is at its maximum.



### Final charge

The charger is in constant voltage mode.  
Charge current is less than its maximum.  
The battery is normally 80-95% charged.  
The charger stays in this mode until the charge current decreases to charge termination level.



### Float (Standby / Ready)

The charger is in standby mode.  
The battery is fully charged. The LED changes to green.  
The charge voltage is at standby level, which means the charger can continue to be connected to the battery.  
The charger can return to rapid charging if the battery is used.



## Charging diagram

