



Service Bulletins & Tips

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Tips from the Experts – Lester Electrical's policy on proprietary chargers and service parts is explained.

Visit us at ISSA/InterClean New Orleans 2004 – Details on our upcoming trade show.

Recently Added Service Documents - Two new service documents that have been added to the [Service Topics](#) page at lesterelectrical.com

COMMON SERVICE TOPICS

Battery Storage and Care

The seasons are changing and for many owners of battery powered equipment that means a period of storage time and/or cold weather exposure is about to commence. Depending on your geographical location, not only do the affects of an extended storage time cause concern but also the potentially harmful affects of freezing temperatures. The improper storage or care of batteries can result in costly battery replacement in the future. Following a few battery storage and cold weather care guidelines can help ensure healthy batteries when the equipment is again placed in service.

Battery Storage

Extended storage of batteries without proper care can result in a condition known as sulfation. Sulfation is essentially an insulating layer that forms on the plates within the battery causing high resistance, which inhibits current flow while a battery is being charged or discharged. The symptoms are usually that of a battery that drops in voltage quickly and provides energy for only a very short amount of time when a load is applied. When charging a sulfated battery, the battery reaches the full output potential of the charger quickly with very minimal charge current accepted.

Sulfation is most often caused by the lack of maintaining a proper state of charge on a battery system for an extended period. Allowing a battery system to become excessively discharged for extended periods will almost always result in permanent irreversible damage to the batteries, which eventually results in costly battery replacement. Even though a battery in storage has no load, it will self-discharge as a result of local action within the battery. Storing batteries in cooler temperatures reduces the amount of local action within the battery but it doesn't mean the batteries can be ignored for extended periods of time.

When the time comes to place equipment in storage, make sure the batteries receive a full charge and the electrolyte is at the proper level. It is recommended that the batteries receive a maintenance/refresh charge every week or at a very minimum of once a month. Maintaining the proper electrolyte level during the storage period is also very important. We advise that you contact your battery dealer or manufacturer and follow their recommendations first.

In early spring we receive many calls regarding charging problems, which are the result of improper maintenance of batteries that had been placed in storage. A large number of the calls are from private owners of golf cars that leave their summer homes during the winter

months. While not as frequent, these calls are also received in the fall from those returning to their winter homes. Private golf car owners are often unaware of the maintenance requirements for batteries placed in storage. These owners also don't realize that many battery and golf car dealers offer services to maintain these battery systems at a minimal cost. If you are a private owner, check with your local battery and equipment dealers for availability of this service.

Large fleets of battery powered equipment, such as golf courses and construction companies, will assign personnel to perform the maintenance tasks needed to protect their large investments. Regardless of the amount of equipment being placed in storage, it is very important that the storage location doesn't allow the batteries to freeze. Once batteries have been frozen they will most likely require replacement.

When the storage period ends and it is time to place the equipment back into service it is common practice to "wake-up" the batteries. No, you don't place an alarm clock next to the batteries or pour cold water on them. To "wake-up" batteries typically refers to the practice of allowing a charger to complete four to five consecutive charge cycles before placing the equipment back into service. This practice will help to promote good battery performance and ultimately good equipment performance.

Cold Weather Care

As previously mentioned, never allow a battery to freeze. A battery that has been frozen will seldom produce any useful output. Care to avoid freezing of batteries not only applies to those placed in storage but also applies to equipment stored outside, such as found in rental yards.

The best defense against a battery freezing is to maintain a full charge on the batteries. A fully charged battery has a much lower freezing point than one in a state of discharge. Water has a freezing point of 32 degrees Fahrenheit, which corresponds to a specific gravity of 1.0. An average specific gravity of the electrolyte found in golf car batteries is approximately 1.265. The higher the specific gravity of the electrolyte, the lower the freezing point. Examples: electrolyte with a specific gravity of about 1.250 has a freezing point of -62 degrees Fahrenheit, while a specific gravity of about 1.100 has a freezing point of 19 degrees Fahrenheit. If extremely cold temperatures are expected, move the batteries into a warmer environment to avoid costly battery replacement.

Cold temperatures also affect the capacity of batteries. The capacity rating of batteries is usually measured at 77 degrees Fahrenheit. Battery capacity is reduced when batteries are used in colder temperatures. This is the result of the slower speed at which the acid in the electrolyte combines with the plate material. It is common practice to place the batteries on-charge in colder temperatures prior to usage. This will help to provide maximum performance from the batteries in colder ambient temperatures.

Proper Care of Deep Cycle Batteries

While we are on the subject of batteries, let's review of some basic battery maintenance practices that will help promote good battery, charger, and equipment performance and life.

Caution: When working with batteries, always wear protective eye shields and clothing. Batteries contain acids that can cause bodily harm. Never place wrenches or other metal objects on top of batteries or near battery terminals. Arcing or explosion of the battery can result.

- Always give new batteries a full charge before placing them into service. Keep in mind, new batteries require a number of cycles, usually about 20, before full capacity will be produced.
- Limit the use of new batteries for the first 20 cycles. It is recommended that new

batteries not be discharged below 50% for the first five charge cycles. New batteries and older batteries that have been in storage are not capable of producing their rated output until they have been discharged and charged a number of times. Excessively discharging new batteries, over 60%, can cause polarity reversal of individual cells resulting in complete battery failure shortly thereafter.

- When temperatures fall below 65 degrees Fahrenheit, the batteries should be placed on charge as soon after use as possible. Cold batteries require more time to charge.
- Keep the tops of batteries and battery terminals clean and dry. This will prevent excessive self-discharge and the flow of current between battery posts and frame.
- Never allow a battery to freeze. This will cause permanent irreversible damage to the batteries.
- Sulfation results when batteries are left in a discharged state in as little as three days in warm temperatures. Batteries placed in storage without being maintained will also self-discharge and sulfate to various degrees, depending on the depth of discharge and length of time left in the discharged state. Minimal sulfation can usually be recovered by repeated charging, although some permanent loss of battery capacity and life can be expected.
- Maintain proper electrolyte level in the batteries. Allowing the electrolyte level to drop below the top of the plates can reduce battery capacity and life. Paste material on the plates of a battery that is allowed to dry will permanently lose any ability to produce an electrical charge. **DO NOT ADD WATER TO A DISCHARGED BATTERY and NEVER OVER-FILL A BATTERY.** Water should only be added to a battery when the battery is at or near full charge. If the electrolyte level is below the top of the plates before starting a charge cycle, add water so the electrolyte level comes even with the top of the plates. Top off the electrolyte level after a full charge has been given.

Electrolyte levels fall during discharge and rise during charge. Adding water to a battery when in a discharged state will cause the electrolyte to overflow from the batteries when being charged. Never add acid to a battery. It is recommended that only distilled water be used to top off batteries. Older batteries nearing the end of their life typically require more frequent watering.

- Follow all operating instructions, cautions and warnings on the charger, batteries and the equipment.

Newsletter Topics

We strive to provide informative and useful information that may assist our readers with obtaining the most from their investment. The topics discussed in our newsletters are written to cover common issues found in a wide variety of markets. If you have a topic that you would like to see covered in a newsletter, please e-mail us at service@lesterelectrical.com indicating the topic and any specific information you would like to see covered. If you have questions regarding the topics discussed in this newsletter or otherwise, please don't hesitate to contact the service department at Lester Electrical and utilize the experience and knowledge of our staff.

TIPS FROM THE EXPERTS

Proprietary Battery Chargers

What is a proprietary charger?

Lester Electrical manufactures many chargers that are unique for applications that meet the specific requirements of our Original Equipment Manufacturer customers (OEM). The costs to design, develop, and test these unique chargers for these applications are significant and

are paid by the OEM.

All chargers we make for specific OEM applications are considered 'proprietary' to that OEM. The ownership and responsibility to sell and service those chargers and any parts unique to them are the exclusive right of the OEM. Lester Electrical will continue to honor the trust our OEM customers expect from us.

Although we may be unable to offer an exact match to replace a proprietary charger, we CAN repair any charger that is sent to us. We can also help diagnose problems with proprietary chargers. Please contact us for more information on our repair and diagnostic services for proprietary chargers.

When an OEM discontinues or no longer supports a proprietary charger, we may then be able to offer it to anyone. Many of the chargers we offer as 'specials' are OEM overstocks.

VISIT US IN NEW ORLEANS

The ISSA/Interclean show is November 17-19 at the Ernest N. Morial Convention Center in New Orleans. ISSA/Interclean, associated with the International Sanitary Supply Association, is the largest cleaning show in the United States and boasts over 700 exhibitors. We will be showing off the latest charging technology for the floor care industry and will be launching a new product line, so visit us at booth #1220.

For more information on the ISSA/Interclean trade show or the International Sanitary Supply Association, please visit the ISSA web site at <http://www.issa.com>

RECENTLY ADDED SERVICE DOCUMENTS

We continue to add documents to our Service Topics Page. Many of these additions are a result of recommendations and questions by our customers, so please keep sending them. This month we have added two commonly requested service part installation instructions. The new documents are:

[Heatsink Replacement](#) (35kb PDF)

[Fuse Assembly Replacement](#) (14kb PDF)

HAPPY HOLIDAYS!

It is hard to believe that 2004 is rapidly coming to an end and that it is already November. Our next issue is the Sales Newsletter in December, so this will be the last *Service Tips & Bulletins* edition until 2005. Therefore, we would like to take this opportunity to wish everyone the best during the upcoming Holiday Season. We value all of the relationships with customers we have built in the past 40+ years and look to build on those relationships in 2005. Have a great November and an even better December. See you next year!