



Service Bulletins & Tips

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In this issue:

Judy Delisi Retirement – Sales coordinator Judy Delisi is retiring after 38 years at Lester Electrical.

New Sales Coordinator – Ken Houfek comes on board as a new member of our Sales Department

Common Service Topics – We revisit one of the most common topics of incoming service calls: Low Voltage Charging.

Tips from the Experts – The recommended way to bring batteries out of winter storage.

New 12V/24V Battery Discharger – A new product offering from Lester Electrical.

Previous Issues of Service Bulletins & Tips – All issues of the *Service Bulletins & Tips* Newsletter can be accessed at <http://www.lesterelectrical.com/news/archives.htm>

JUDY DELISI RETIRES AFTER 38 YEARS

Judy Delisi, a long-time employee at Lester Electrical, will retire on March 4, 2005. Judy was the 24th employee hired at Lester Electrical and has seen the company go through several different periods of growth.

Judy has worked in several departments at Lester, beginning as a general office employee. Since her hiring, she has worked in accounts receivable, accounts payable, as the receptionist, and for the past 14 years in the Sales Department. Her plans for retirement include traveling with her husband and spending time with her family.

NEW SALES AND SERVICE COORDINATOR

Ken Houfek has been hired on as a sales and service coordinator. He will be filling the position vacated by Tammy Kramer, who will be taking over Judy Delisi's responsibilities. Ken comes to Lester Electrical after working for Interstate Battery and also has extensive experience in the power wheelchair market. He has training in electric motor repair and has worked in production and maintenance functions in previous jobs.

Ken's primary duties will include providing technical support and repair quotes to customers, answering service calls, and assisting the other sales coordinators with inbound sales calls and order entry. Ken can be reached at (402) 477-8988 x137.

COMMON SERVICE TOPICS

My Charger Won't Start!

The most frequent complaint we hear from our customers is that their older Lestronic automatic charger will not start. The cause in more than 90% of these calls was not due to a failure of the charger, but rather low voltage of the batteries or an open or poor connection somewhere in the DC wiring of the machine. If the batteries fall below 70% of their rating, for example 0.7 X 36 volts = 25.2 volts, the charger will not start.

To understand how our automatic chargers work, you need to understand how our automatic timer control boards work.

The timer control board must sense the presence of both AC and DC power to function. The AC source is the wall receptacle; the DC source is the battery pack. Both must be

present before the charger will start a charge cycle.

What does the control board do the instant after you connect both AC and DC plugs? It first samples the DC voltage of the batteries. If it measures that the DC voltage of the batteries is within the range that the charger was designed for, yet low enough to require a charge cycle, it then uses the DC voltage from the batteries to energize a relay.

This DC activated relay then closes and completes the circuit that supplies AC power to the transformer. The charger will then start, the hum of the transformer will be present, and the ammeter or charge status LEDs will indicate charge progress.

In this example we will use a 36-volt 'wet' lead-acid battery pack in a golf cart consisting of six 6-volt deep-cycle wet batteries. A 'wet' battery has removable screw-in battery caps that can be removed to allow you to refill the cells with distilled water. Batteries that do not have removable caps fall into a category designated as 'sealed'. Examples are AGM, gel, valve-regulated, etc. Sealed batteries are charged at different rates and to a lower maximum voltage level than wet batteries.

Our example charger used on a 36 volt wet battery system will not start unless the batteries have a DC voltage between 25.2 volts minimum or are over 46 volts maximum. The main reason for the low limit is that if you were to connect a 36-volt charger to a 24-volt battery pack and get it to start, the charger would never turn off. This measure of protection is an intentional feature of the control board.

Battery manufacturers suggest to not repeatedly discharge batteries below 1.75 volts per cell, or in this example $1.75 \times 18 \text{ cells} = 31.5 \text{ volts}$. You'll note this low limit recommendation is 6 volts higher than the threshold of our control board.

The reason for the upper limit is that 46 volts is considered to be a full charge for a 36-volt battery pack and is the normal turn-off target. This may sound high but consider that this measurement is read while the charger is operating. If you were to turn the charger off and wait 5 minutes you would find that the battery pack voltage would typically measure 39 to 40 volts.

Battery manufacturers consider 2.5+ volts per cell as a full charge measured while the charger operates, so in this example we have $2.5 \times 18 \text{ cells} = 45 \text{ volts}$.

If you find that your batteries have adequate voltage yet the charger does not start, don't overlook an open or poor connection of the DC circuit. The best way to verify a proper connection is to remove the cover from the charger, connect the DC plug only, and check for voltage at the connecting points of the DC cord wires inside the charger. We frequently find poor connections at the female DC receptacle or in the two charging wires leading to the pack.

Although we have lowered the start voltage limit in our MC3 timers used on newer chargers, the best practice to prolong the life of the batteries is to avoid excessive discharge if at all possible. For a pack that will see prolonged storage we recommend connecting the charger at least once a month to keep the batteries properly charged.

In the event you experience a no-start low voltage condition please contact us for specific details on a solution that allows you to use the existing charger to charge even dead batteries.

TIPS FROM THE EXPERTS

Spring marks the beginning of the golf season for much of the United States. With the beginning of the golf season, the Lester Electrical Service Department fields many calls from people bringing their golf carts out of storage. While this topic was briefly covered in the January *Service Bulletins & Tips*, we thought it would be beneficial to touch on this topic once more as the weather warms up.

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. 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.

In order to perform consecutive charge cycles, you will need to know the type of charger you have. Most golf cart chargers are shelf chargers, otherwise known as portable chargers. Following the automatic shut off from one charge cycle, it will be necessary to unplug the DC cord from the golf cart to reset the circuit. After disconnecting the DC plug, simply reconnect the plug to the receptacle to begin the next charge cycle. You should complete four or five full charge cycles to fully charge the batteries and get them ready for an enjoyable season of golf.

This type of waking up process is recommended for any application in which the batteries have been in storage for a long period of time. On some of these applications, there are battery chargers that are considered built-in units. The process for performing consecutive charge cycles in these applications is to disconnect and reconnect the AC plug following the automatic shutoff. Doing this in built-in units resets the charge controller and allows you to perform consecutive charge cycles.

NEW 12V / 24V BATTERY DISCHARGER

Lester Electrical is pleased to announce the addition of Model #25270, a 12V/24V Battery Discharger to its current product line. Prior to this addition, the Lester Electrical product line consisted of Model #17770, a 36V/48V Discharger, and Model #18400, a 36V Discharger.



With the addition of Model #25270, a more complete range of battery voltages is served. Like our other Dischargers, this model runs without AC input so there is no need to drag around extension cords or find an outlet to plug into. This discharger is also electronically controlled with a built-in microprocessor that automatically determines the battery voltage being tested. It can be programmed to shut off based on voltage or time and the discharge data can be viewed on the LCD display or downloaded to a computer with the built-in RS-232 port.

Large 500-amp alligator clips, heavy-duty DC cables, and an 18G powder-coated steel case ensure years of trouble free use. Made in the USA, this product is simple to operate and the testing cycle is automatic, shutting off automatically when complete.

This Discharger discharges at 75 amps, following accepted industry standards. For those service shops that carry both the 12V/24V model and the 36V/48V model, we have made the 12V/24V model with a red and black case, reducing the possibility of the two models to

be mistaken for one another. Case dimensions are identical to Model #17770 and #18400, which are 14.1" x 10.63" x 10.25" (WxHxD) with a built-in cord wrap on the handle.

For technical specifications, pricing, and delivery on all of Lester Electrical's Battery Dischargers, please contact a Lester Electrical technical service representative at (402) 477-8988 or email at service@lesterelectrical.com.