To reduce the risk of fire and the risk of SEVERE INJURY or DEATH to persons:
• Disconnect electrical power to operator BEFORE proceeding.
• Disconnect battery power internal to operator.
• DO NOT dispose of the battery in fire. The cells may explode. Check with local codes for disposal instructions.
• DO NOT open or mutilate the battery. Released electrolytes are corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
• Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets and keys.
• Change the battery provided with one identified for use with this product ONLY in accordance with the instructions and limitations specified in the manual.
• Observe proper polarity orientation between the battery and charging circuit.
• DO NOT mix batteries of different sizes or from different manufactures in this product.

NOTE: Solar panel is not provided. A 20W 12V solar panel is recommended.
PREPARATION

This kit is not intended to replace or eliminate the need for the primary batteries provided with the operator. Primary batteries are REQUIRED to operate the gate. Both the primary and external batteries must be fully charged prior to installation. It is strongly recommended that new batteries are used for solar applications.

- Verify kit contents.
- You will need to purchase a UL recognized, sealed lead-acid (SLA) battery (not included) or a marine deep cycle battery. See Suggested Batteries.

**NOTE:** Automotive batteries are not acceptable.

<table>
<thead>
<tr>
<th>Suggested Batteries</th>
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<tr>
<td><strong>MFG</strong></td>
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<tr>
<td>Jolt</td>
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<tr>
<td>Werker</td>
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<tr>
<td>Universal</td>
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<td>PowerSonic</td>
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<tr>
<td>Genesis</td>
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Potential sources:
- www.batterygiant.com
- www.apexbattery.com
- www.batteriesplus.com

INSTALL BATTERY BOX

**Location**

The battery box must be located within 10’ of the operator control box. The box must be located in a place where it cannot be damaged due to flooding, excessive contact or by being knocked over. Place battery box either on the ground or a stable platform (not provided).

**NOTE:** Image is for reference only, your operator and control box may appear different.
WIRING
Open battery box. Remove and retain fuse in fuse holder. Route output cable and solar panel(s) cable as shown. Reminder, as soon as sunlight hits the solar panel(s) there will be electrical power at the leads. Leave the leads covered until ready to connect them. Extend output cable though strain relief leaving slack in the battery box, and tighten top strain relief. Attach red wire from solar cable to terminal 4 on solar controller and black wire to terminal 3. Tighten bottom strain relief. Attach and tighten the provided wire tie to both cables on the inside of the box.

NOTE: If using a marine (flooded) battery, metallic jumper must be removed for proper charging. If using a sealed lead-acid (SLA) battery, leave jumper in place.

1 Panel Wiring

2 Panel Wiring

NOTE: Remove the battery and use a 3/4” drill bit to drill additional hole. Be careful not to hit any wires.

Multiple Panels Overview
When multiple panels are required, they must be wired in parallel to terminals 3 and 4 on the solar controller.
**WIRE BATTERY BOX TO OPERATOR CONTROL BOX**

**Install Power Adapter**

Open control box cover and disconnect primary operator batteries at the control board. Locate the 24Vac input on the control board. Attach the yellow and black wires to the 24Vac input terminal (polarity is not important). Insert the provided strain relief though one of the knockouts and thread the battery box output cable through strain relief in the control box. Attach black wire from the output cable to the black wire on the power adapter connector. Attach the white wire from the output cable to the red wire on the power adapter connector. Place power adapter inside of the control box.

![Diagram of power adapter connection](image)

**NOTE:** For the LA400 the SAVE switch (S1) must be in the ON position after all operator adjustments have been made.

**INSTALL BATTERY**

**Wire Battery**

**NOTE:** Battery voltage must be above 12Vdc for proper operation.

Install the 12V 75AH min. (fully charged) sealed lead-acid battery into the battery box. Connect the orange wire to the positive terminal on the battery. Insert the 5 amp fuse into the fuse holder. Connect the black wire to the negative terminal on the battery. Reminder, if using a deep cycle marine battery, the metallic jumper must be removed for proper charging.

![Diagram of battery connection](image)

**COMPLETE INSTALLATION**

Reconnect internal batteries to the control board and ensure that all wires are secure. Close control box cover and battery box. Secure battery box with strap (provided) if desired.
IMPORTANT NOTE: For the LA400 to conserve battery voltage, the **SAVE** switch located inside the gate control box must be in the **ON** position so board goes to **SLEEP** mode (if **SAVE** switch is not turned to the on position, batteries will drain prematurely).

The Chamberlain Gate operator uses 2 - 12 volt 7amp hour batteries (24 volts) in the gate control box to keep the control board alive and arms functioning (in operation). These are referred to as the primary batteries. This battery kit is designed as a secondary DC power source for charging the primary batteries, not replacing the primaries. If the primary batteries are below operational voltage, attaching this secondary solar panel(s) kit will not immediately operate the gate operator, only after the secondary battery charging devise charges the primary batteries to an acceptable 24 volt level for operation prior to install.

Recharging depleted batteries is a challenge for solar systems requiring full sun for extended periods, therefore it is recommended charging both primary and secondary batteries using an AC trickle charger and beginning with a fully charged system.

It is assumed that the actual operator has been installed correctly and that its operation was verified before the installation of the solar kit, so that if there are any problems we can confine them to the solar operation.

Solar systems are 100% dependent upon the amount of sun and direction of the solar panel(s) to maximize the battery charge. The system should be evaluated several times during the first month of operation to see if the external battery is being replenished by the solar panel(s). Also note that December in the US typically has the lowest amount of solar energy reaching the earth with June the maximum. If the battery voltage should continue to decrease, the system should be checked to see if the solar panel(s) is pointed properly, and if so an additional panel(s) may be required for this location. Obviously the number of operation cycles per day is another factor to be considered. In addition to the first month of use, the battery should be measured several times during the first year to make sure the lack of sun does not discharge the battery below 11.5 volts as an additional solar panel(s) may be required.

To verify correct solar operation, review the following:

**CHARGING**

With sun shining on the solar panel(s), the green charging LED on the solar controller in the battery box should be on, indicating that the panel(s) is supplying power to the battery. If the green LED is not illuminated check:

1. Solar panel(s) connection at terminals 3 and 4 and polarity (See wiring diagram), and that no part of the solar panel(s) is in the shade.
2. The battery connections are secure and their polarity is correct.
3. Fuse F1 is good and installed.

Inside the gate control box, measure voltage across the yellow and black wires from the output of the power adapter.

1. If this voltage measures greater than 31 volts (yellow positive), installation is complete.
2. If voltage is less than 31Vdc, see Troubleshooting Procedures.

If the there is no voltage out of the power adapter.

1. Verify 12-14Vdc on terminals 5 and 6 at the solar controller, verify voltage at both sides of the power adapter connector block (white positive).
2. Reverify the fuse is good.

If the voltage output of the power adapter is less than 31 volts, but greater than 20.

1. Unplug connector on gate control board and reconnect.
2. If the voltage rises to 31Vdc, installation is complete. If not, the batteries inside the gate control box may require charging or replacement with new batteries.
# TROUBLESHOOTING

*NOTE: Follow steps below if any of the components of the battery kit or the gate operator fail to operate properly.*

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
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</table>
| Battery charger LED (green) fails to light. | 1. Solar panel(s) may not be mounted properly or the day may be too cloudy to provide enough sunlight. Check mounting, orientation, and possible shading of the solar panel(s) or wait for a brighter day to verify. Check the panel(s) for damage or pinched wires.  
2. Wire polarity connections. Verify that the red and black wires go to the correct locations on the battery charger module (see wiring diagram). |
| Operator control board does not power up once power adapter is connected. | 1. This battery kit will only work with operators that have local batteries that are used to provide motor current. Make sure these batteries are good and properly connected to operator control board.  
**NOTE:** This battery kit does not replace the operator batteries nor will it prevent the replacement of those batteries during normal maintenance for the operator.  
2. Blown fuse. It is possible that a fuse, either in the battery cable harness or on the operator control board, may have been blown during the installation. If a blown fuse is found, first check all wiring to make sure it is correct, and then replace the fuse with the same size and type.  
3. Battery is not charged. It is possible that the 12V 75AH min. battery (not provided) was not fully charged when installed. Use a voltmeter to make sure this battery is good and has at least 12V across the open circuit terminals. |
| Operator powers up but does not run properly. | 1. Debris or other obstructions are affecting gate travel. Make sure that the battery box, solar panel(s), and all connecting wires are clear of the gate. Clear the gate of all obstructions and verify all protection devices are operating properly. See gate operator owner’s manual for additional troubleshooting. |
| Operator works fine for several weeks or months but then batteries die. | 1. Obstructed solar panel(s). Verify the correct installation and orientation of the solar panel(s). Make sure that the solar panel(s) is unobstructed from the sun throughout the entire day and the glass is clean.  
2. Too many accessories will eventually drain the battery despite its larger size and capacity. Contact technical support at 1-800-528-2806 if accessories are required for the installation. Mag-locks must NOT be used with solar applications.  
3. Inadequate solar panel(s). Many locations are not suitable for solar installations because of local geography or locations that simply do not receive enough sunlight. Contact technical support to determine if an additional solar panel(s) will help with your installation or if solar is entirely unsuitable.  
4. Make sure SAVE switch is on after adjustments have been made for the LA400. |
| Red LED load disconnect on. | At 11.5V, the light comes on. Refer to Troubleshooting Procedures. |
TROUBLESHOOTING PROCEDURES

Required test equipment:

- Digital multimeter, to measure current (5 amps max.) and DC voltage

All solar measurements must be taken when the sun is out.

If your operator is not working, due to a low battery condition, follow the following steps (gate will be open and red LED on the sunsaver will be on):

1. Measure the voltage on the primary batteries. The combined battery voltage must be above 25V, if not, recharge or replace the internal batteries.
2. Remove the external battery box cover and check for load disconnect LED (red). If load disconnect is on, remove battery and charge to 12.5Vdc.
3. Verify that the battery is a 75 amp Hour (min.) Sealed lead-acid battery (SLA). Other types of batteries will dramatically decrease the effectiveness of this kit (do not use a standard automotive battery). If using a flooded, marine-type battery, make sure that the jumper is removed (see page 3).
4. Check fuse and all other connections in battery box.
5. Remove the external battery from the battery box while wires are connected.
6. Open the main control box and disconnect the white wire, from the battery box to the power adapter.
7. Inside the battery box, remove red wire from the solar panel(s) to sunsaver and place a DC amp meter between the red wire from the solar panel(s) and terminal 4 on the sunsaver (Figure 1). The current should read 0.8 amps with the panel(s) pointed properly in direct sunlight unless the battery is fully charged. If less than 0.8 amps, clean and/or redirect the panel(s) due south. An additional panel(s) may be required.
8. Reconnect the red wire from the solar panel(s) to terminal 4. Disconnect the black lead of the battery and measure the current between the black wire and the negative battery terminal (Figure 2). Readings should be slightly less than the reading in step 7 (a current reading much less than step 7 indicates a problem with sunsaver or battery is fully charged). If battery checks OK, replace the sunsaver.
9. Reconnect the external battery and measure voltage across 5 & 6 on the sunsaver (black and white). Now measure the voltage across the black and white wires at the adapter located in the electrical box (Figure 3). Voltage should be the same. If not, check connection. Reconnect the white lead.
10. Measure the voltage coming out of the power adapter (black and yellow wires) (Figure 4). This should be greater than 30 volts. If not, replace the power adapter.
11. If there are still problems with the installation, please contact Technical Support at 1-800-528-2806.
NOTE: Automotive batteries are not acceptable.