



BATTERY REPLACEMENT GUIDE

Uninterruptible Power Supply Models:

SG5K-1TX, SG5K-1TXC

SG5K-2T, SG5K-2TC

SG5K-2TX, SG5K-2TC

SG6K-1TX

SG6K-2T, SG6K-2TC

Note: Extended battery banks are not covered in this guide, please contact the factory for information



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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This guide contains important instructions which must be followed during the maintenance of this UPS and its batteries. Please read all instructions before operating this equipment and save this guide for future reference.

CAUTION

Servicing of batteries should be performed by personnel knowledgeable of batteries and the required precautions. Keep unauthorized personnel away from batteries. When replacing the UPS batteries, use the same number and type of batteries.

CAUTION

High voltage exists within the unit, which could cause electrical shock. Always unplug this UPS and remove the UPS battery fuse (if present) prior to attempting battery replacement.

CAUTION

This UPS contains its own energy source (batteries) and may have external battery sources. The output receptacles may carry live voltage even when the UPS is not connected to an AC source.

This UPS contains sealed maintenance-free batteries (VRLA). When situated in a typical office environment, with the proper charging and limited cycling, the batteries can last many years. In home, office or computer room environments, the batteries should be replaced every three to five years. In critical applications replace the batteries every two years.

CAUTION

When replacing the UPS batteries use the same number and type of batteries. Exercise extreme caution when servicing the 240Vdc batteries in the UPS and External Battery Banks due to the risk of electrocution.

**The batteries approved for the Falcon SG 5 & 6 UPS models are as follows:
20 pieces of Yuasa/Energys NP7-12, 7Amp Hour, 12Vdc VRLA Type Battery (240Vdc) or
20 pieces of CSB GP 1272 F2, 7.2 Amp Hour, 12Vdc VRLA Type Battery (240Vdc)**

For reference, the batteries approved for the Falcon SG 5 & 6 Extended Battery Bank models are as follows:

**40 pieces of Yuasa/Energys NP7-12, 7Amp Hour, 12Vdc VRLA Type Battery (240Vdc) or
40 pieces of CSB GP 1272 F2, 7.2 Amp Hour, 12Vdc VRLA Type Battery (240Vdc)**

CAUTION

NEVER dispose of batteries in a fire, as batteries will explode.

NEVER dispose of used batteries in the trash or landfill as it is a violation of federal and state laws. **The batteries must be recycled.**

For battery recycling information, please contact:

www.energysinc.com/default.asp or

www.csb-battery.com/Top/english/recycle_state.htm

for the name and address of the nearest battery recycling facility.

CAUTION

Never open or mutilate the battery or batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

CAUTION

A battery can present a risk of electrical shock and high short circuit current.
ALL BATTERY SERVICING OR REPLACEMENT MUST BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN.

ALL BATTERY SERVICING OR REPLACEMENT IS PERFORMED AT THE RISK OF THE PERSONS, ENTITIES OR COMPANIES PERFORMING THE BATTERY SERVICING OR REPLACEMENT OF FALCON ELECTRIC, INC. PRODUCTS.

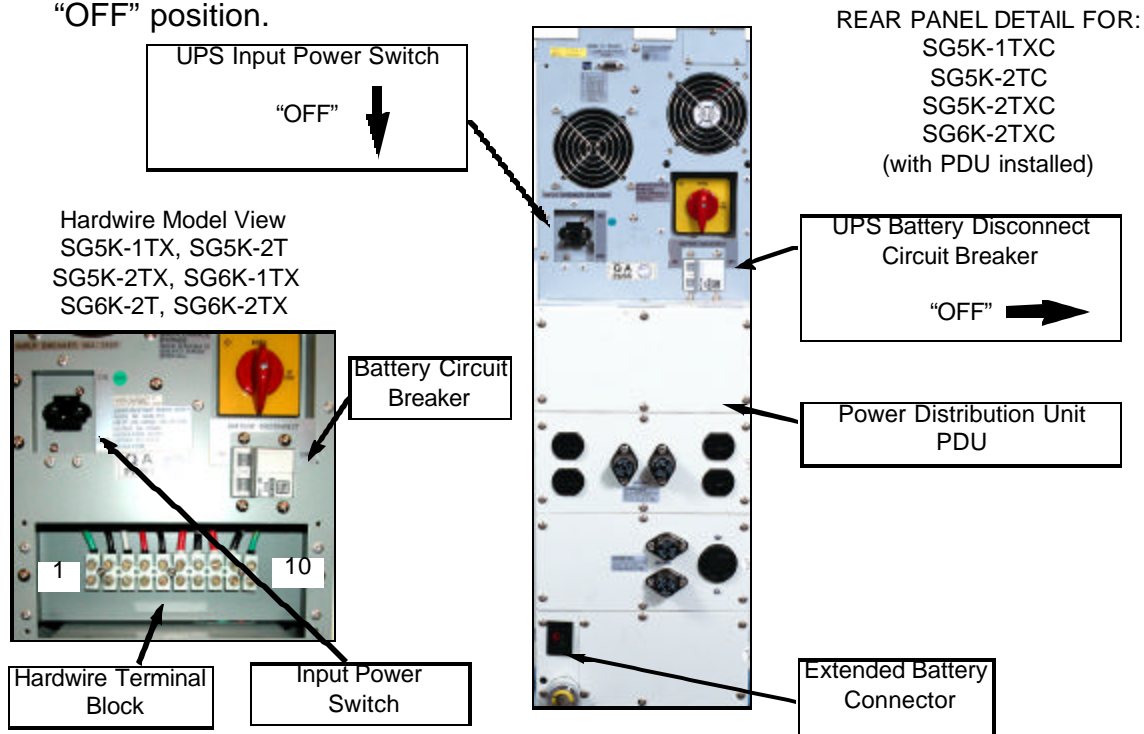
THE FOLLOWING IS GIVEN AS A GUIDE ONLY. THE PERSON(S) PERFORMING THE BATTERY REPLACEMENT MUST HAVE PRIOR KNOWLEDGE AND EXPERIENCE IN UPS BATTERY REPLACEMENT, AND IN THE PROPER CARE, HANDLING AND RECYCLING OF SEALED, LEAD ACID BATTERIES.

LIMITATION OF LIABILITY:

FALCON ELECTRIC, INC. ASSUMES NO LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE DUE TO THE THIRD PARTY SERVICING OR REPLACEMENT OF BATTERIES IN FALCON PRODUCTS, INCLUDING BUT NOT LIMITED TO, LIABILITY FOR INJURY, LOSS OF LIFE, PROPERTY DAMAGE, LOSS OF USE, LOSS OF DATA, LOSS OF TIME, INCONVENIENCE OR COMMERCIAL LOSS, OR BREACH OF IMPLIED OR EXPRESSED WARRANTIES. ANY AND ALL SUCH LIABILITY IS EXPRESSLY EXCLUDED. IN NO EVENT SHALL FALCON ELECTRIC, INC. BE RESPONSIBLE FOR ANY AMOUNT. IF FALCON ELECTRIC INC. DETERMINES THAT ANY THIRD PARTY SERVICE WORK HAS BEEN PERFORMED IMPROPERLY OR IN A MANNER INCONSISTENT WITH FALCON ELECTRIC, INC. SERVICING AND WORKMANSHIP CRITERIA, ALL EXISTING WARRANTIES IN EFFECT FOR THAT PRODUCT WILL BECOME NULL AND VOID.

UPS Battery Replacement

1. Verify the UPS has been turned off. Reference the picture below detailing a typical SG5-6kVA model rear panel and turn the battery disconnect circuit breaker to the "OFF" position.

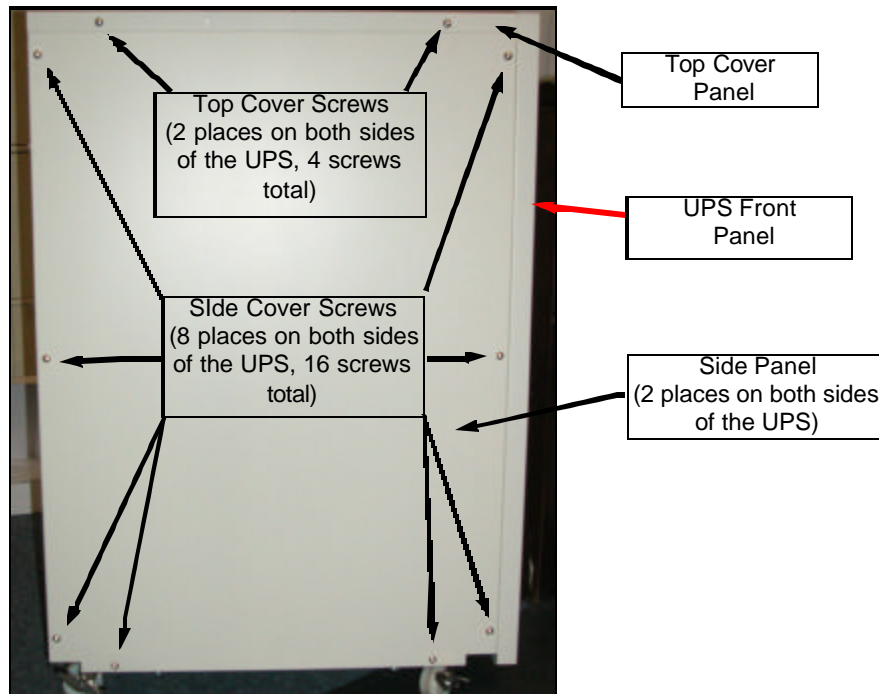


2. Verify the UPS does not have any extended battery banks connected to it. For models with a PDU, disconnect any cable connected to the extended battery connector. For hardwired models, verify no external hardwire connections are made to terminals 4 & 5 of the hardwire terminal block. If connections are visible, locate the external battery cabinet(s) and turn the battery disconnect circuit breaker(s) to the "OFF" position in the same manner as the UPS in step 1.
3. If the SG UPS model has an input line cord and plug, unplug the UPS plug from the utility outlet. For all other hardwire models, go to step 4.
4. If the SG UPS model is a hardwire type, locate the building service panel and the circuit breaker that powers input to the UPS. Next, turn the circuit breaker powering the UPS to the "OFF" position.
5. To verify the UPS has been properly disconnected from all energy sources, return to the UPS and turn the UPS Input Power Switch to the up or "ON" position. **THE UPS SHOULD NOT POWER UP.** Next depress the button marked ON/OFF on the UPS front control panel, again **THE UPS SHOULD NOT POWER UP.** Now turn the UPS Input Power Switch, down or to the "OFF" position.

If the UPS should power up upon performing any of the actions in this step, recheck steps 1 through 5 in an attempt to determine the AC or DC power source that is still connected to the UPS. All power sources must be disconnected from the UPS and a successful completion of step 5 before continuing to step 6.

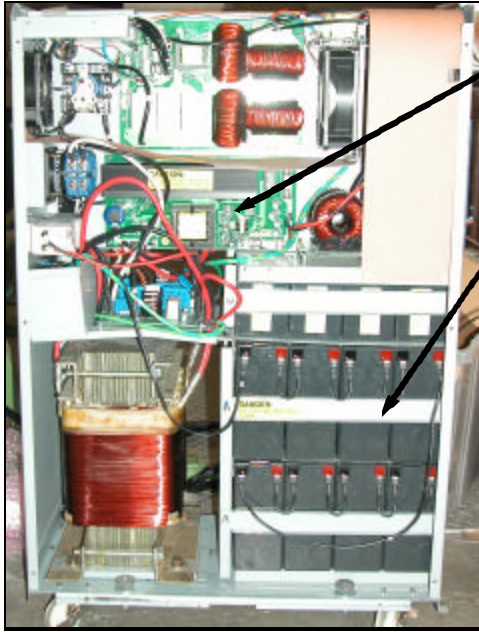
6. Refer to the picture below. Remove the (4) screws securing the UPS top cover panel, (2) screws located on each side of the panel. From the edges of the top cover panel closest to the front panel, lift the top cover panel upward. Some force may be necessary as the top cover panel is a press-fit over the UPS side panel flanges. Continue lifting the top cover panel upward until free of the UPS. Set the screws and the top cover panel aside.
7. Refer to the picture below. Remove the (8) screws securing the left side panel of the UPS. Remove the side panel and set aside. Remove the (8) screws securing the right side panel. Remove the side panel and set aside.

TYPICAL UPS & EXTENDED BATTERY BANK
SIDE VIEW



8. The batteries are located on both sides of the UPS chassis. Please take a few minutes to acquaint yourself with the positions of the batteries inside the UPS and the photos on the next page. It is important to locate all of the battery and associated wiring locations prior to starting the battery removal/installation process. **REMOVE ONE OF THE SHORT BATTERY INTERCONNECT JUMPERS FROM A BATTERY GROUP ON EACH SIDE OF THE UPS CHASSIS PRIOR TO PLACING YOUR HANDS INSIDE THE CHASSIS TO REDUCE THE RISK OF ELECTRICAL SHOCK.**

UPS RIGHT SIDE VIEW



BATTERY CHARGER
CIRCUIT BOARD

MAIN PS/DR
CIRCUIT BOARD

Batteries on right
side of the UPS

BATT+ & BATT-
Terminals

Additional batteries
on the left side
of the UPS

UPS LEFT SIDE VIEW



RIGHT SIDE BATTERY DETAIL



Left Bay 1
(4) Batteries

Right Bay 1
(4) Batteries

Left Bay 2
(4) Batteries

Right Bay 2
(4) Batteries

Left Bay 3
(4) Batteries

Battery Hold Down Brackets
& Mounting Screws
(2) Places

LEFT SIDE BATTERY DETAIL



Battery Hold Down Brackets
& Mounting Screws
(3) Places

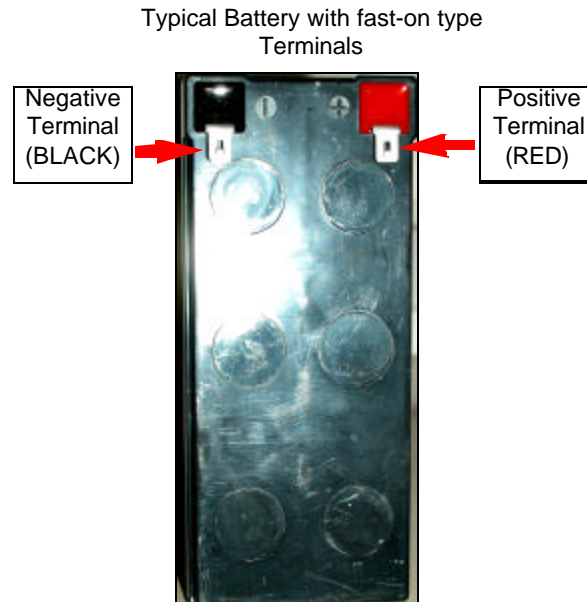
Detail of Battery
Bracket tab-in-slot
mounting



Detail of the opposite end of the
Battery Bracket secured by a screw.
(shown with the screw removed.)



9. One at a time, remove the screw securing each of the (2) battery hold down brackets per the right side view on the previous page. Remove the brackets from its mating chassis slot and set aside.
10. One at a time, remove the screw securing each of the (3) battery hold down brackets per the left side view on the previous page. Remove the brackets from its mating chassis slot and set aside.



11. Remove the short battery jumper wires from between BATT1 - BATT4, BATT5 - BATT8, BATT9 - BATT12, BATT13 - BATT16 & BATT17 - BATT20.
12. Remove the wires from the BATT8 positive terminal, BATT1 negative terminal. BATT20 positive terminal, BATT17 negative terminal jumper to BATT16 positive terminal & remove the wire on the BATT9 negative terminal.
13. Remove the long jumper wires from between the BATT5 negative and BATT4 positive terminals. Also from between the BATT12 positive and BATT13 negative terminals.
14. You are now ready to remove the old batteries from the chassis and install the new ones. To avoid confusion when reinstalling the new batteries please take a few minutes to observe the positions of the old batteries prior to removing them.
15. Remove the (4) batteries from right side Bay 1. Next remove the (4) batteries from the right side Bay 2. Now install (4) new batteries (with the terminals up) into the right side Bay 2. Install (4) more new batteries (with the terminals up) into the right side Bay 1.
16. Reinstall the (2) battery hold down brackets over the batteries in the right side Bays 1 & 2, securing with the screws removed in step 9.

17. Remove the (4) batteries from the left side Bay 1. Next remove the (4) batteries from the left side Bay 2. Finally, remove the (4) batteries from the left side Bay 3. Now install (4) new batteries (with the terminals up) into Bay 3. Install (4) more new batteries (with the terminals up) into the left side Bay 2. Install the final (4) new batteries **(WITH THE TERMINALS OUTWARD)** into the left side Bay 1. **USE CARE NOT TO SHORT THE BATTERY TERMINALS TO THE CHASSIS METAL PARTS.**
18. Reinstall (2) of the left side battery hold down brackets over the batteries on Bays 2 & 3 and secure with the screws removed in step 10.
19. Reinstall (3) small battery jumpers between BATT17 positive to BATT18 negative, BATT18 positive to BATT19 negative and BATT 19 positive to BATT20 negative. Next, reinstall the RED (B) wire to the BATT20 positive terminal. Reinstall the black jumper to the BATT17 negative terminal. You may have to slide the batteries out slightly to get at the terminals to reinstall the wiring.
20. Reinstall the (1) remaining battery hold down bracket over the batteries located on the left side Bay 1 and secure with the remaining screw removed in step 10.
21. Reinstall the (6) small jumpers between BATT9 positive to BATT10 negative, BATT10 positive to BATT11 negative, BATT11 positive to BATT12 negative, BATT13 positive to BATT14 negative, BATT14 positive to BATT15 negative, BATT15 positive to BATT16 negative.
22. Reinstall (1) of the long jumpers removed in step 13 from BATT13 negative to the BATT12 positive terminal. Now reconnect the black wire coming from the right side BATT8 positive, to the BATT13 negative terminal. Connect the black jumper connected to the BATT17 negative terminal to the BATT16 positive terminal. The left side battery wiring is now complete go to the next step.
23. Reinstall the (6) small battery jumpers between BATT5 positive to BATT6 negative, BATT6 positive to BATT7 negative, BATT7 positive to BATT8 negative, BATT1 positive to BATT2 negative, BATT2 positive to BATT3 negative, and BATT3 positive to BATT4 negative.
24. Reinstall (1) of the remaining long jumpers removed in step 13 to the BATT5 negative terminal and the other end to the BATT4 positive terminal. Now reconnect the black wire coming from the Battery Circuit Breaker to the BATT1 negative terminal. **DO NOT RECONNECT THE RED WIRE TO THE BATT20 POSITIVE TERMINAL AT THIS TIME AS UPS DAMAGE MAY RESULT.**
25. Using a voltmeter set to the 300Vdc scale, place the positive (red) lead on BATT1 negative (BLACK) terminal and the positive (RED) terminal on the BATT20 positive terminal. The meter should read 235 - 276Vdc. If you do not get the correct voltage reading recheck steps 18-24. **DO NOT PROCEED UNTIL THE CORRECT METER READING IS OBTAINED.**
26. Reconnect the RED wire coming from the main circuit board location +BATT to the BATT20 positive terminal.

27. Reconnect all wiring removed in steps 4 through 1. (reverse order)
28. Turn on the Circuit Breaker at the service panel if turned off prior.
29. Turn on the UPS Battery Circuit breaker.

TO TURN UPS ON: ALWAYS TURN ON THE BATTERY DISCONNECT CIRCUIT BREAKER FIRST, THEN TURN ON THE MAIN AC POWER SWITCH LOCATED ON THE REAR PANEL. DO NOT PRESS THE "ON" BUTTON LOCATED ON THE FRONT PANEL OR THE UPS WILL BE PLACED INTO BYPASS MODE.

TO TURN UPS OFF: TURN OFF THE MAIN CIRCUIT BREAKER LOCATED ON THE REAR PANEL AND DEPRESS THE "ON/OFF" BUTTON UNTIL THE UPS BEEPS AND WAIT FOR THE UPS TO SHUT DOWN AND TURN OFF (ABOUT 30 SECONDS)

30. Turn on the UPS input switch located on the rear panel. The UPS should sequence up in a normal manner and go to inverter operation within 60 seconds. Next turn off the UPS input switch: the UPS should now operate in battery mode. Turn the UPS input switch back on and the UPS should again return to normal utility operation with 60 seconds.
31. While the UPS is operating normally from the utility power source, switch off the Battery Circuit Breaker located on the UPS rear panel. Locate the BATT + & BATT - terminals on the bottom of the main PSDR board (see page 5 for the board location). Using a Voltmeter set to the 300Vdc scale measure the battery charger voltage at these test points. The voltage should be +274Vdc +/-2Vdc. If this voltage is close but not within the specified readings, adjust potentiometer VR401 located on the Battery Charger circuit board (see page 5 for board location). If the battery charger voltage cannot be adjusted to within the specified limits, contact Falcon Electric Technical Support.
32. Turn the Battery Circuit Breaker back to the on position.
33. Turn off the UPS input switch and depress the OFF button on the control panel to shutdown the UPS. Next, turn off the Battery Circuit Breaker.
34. Take a few minutes to perform a visual inspection of the UPS. Verify all wiring connection are secure and that no wiring will be pinched when the side and top covers are installed. Recheck all battery connections.
35. Perform steps 8 through 6 (reverse order), reinstalling both side covers and the top cover panel.

32. Reinstall the two rear panel screws removed in step 2 and tighten.
33. Gently place the UPS on its side with the bottom facing you.
34. Reinstall the four screws removed in step 4 and tighten.
35. If the UPS is model SG1K-1T reinstall the battery fuse and cap.
36. Connect the UPS to an utility power source.
37. Turn on the UPS power switch located on the rear panel. The UPS should power up and function normally as defined in the Owner's Manual.
38. Leave the UPS turned on for 24 hours to allow the batteries to fully charge.