

OWNER'S  
MANUAL

SG Series  
Maintenance  
Bypass Option

1KVA – 3KVA



**MODELS**

**MB1K-1, MB1K-2**

**MB2K-1, MB2K-2**

**MB3K-1, MB3K-2**

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# IMPORTANT SAFETY INSTRUCTIONS, SAVE THESE INSTRUCTIONS

This manual contains important instructions that must be followed during the installation and maintenance of the maintenance bypass.

**CAUTION: RISK OF ELECTRICAL SHOCK. HAZARDOUS LIVE PARTS INSIDE THIS UNIT MAY BE ENERGIZED FROM THE CONNECTED UNINTERRUPTIBLE POWER SUPPLY; EVEN WHEN THE UTILITY POWER HAS BEEN DISCONNECTED.**

## INTRODUCTION

The SG Series Maintenance Bypass Option was specifically designed to allow for replacement of an SG Series UPS that has failed or requires maintenance, while providing uninterrupted power to the critical load.

To this end, the bypass switch incorporates “make before break” contacts to transfer the critical load from the UPS to the bypass line connected directly to the utility. Two sets of utility input terminals are provided allowing for the connection of separate utility branches (same phase only).

A lockout solenoid prevents maintenance bypass switching until the UPS is in its internal bypass state, activating the maintenance bypass control line. This feature assures against UPS damaging out of phase transfers.

Status indicator lights are provided informing the user of the operating status. They consist of UPS Bypass, Line, UPS Output, Normal and Bypass. An output circuit breaker is incorporated providing over current protection for the critical load.

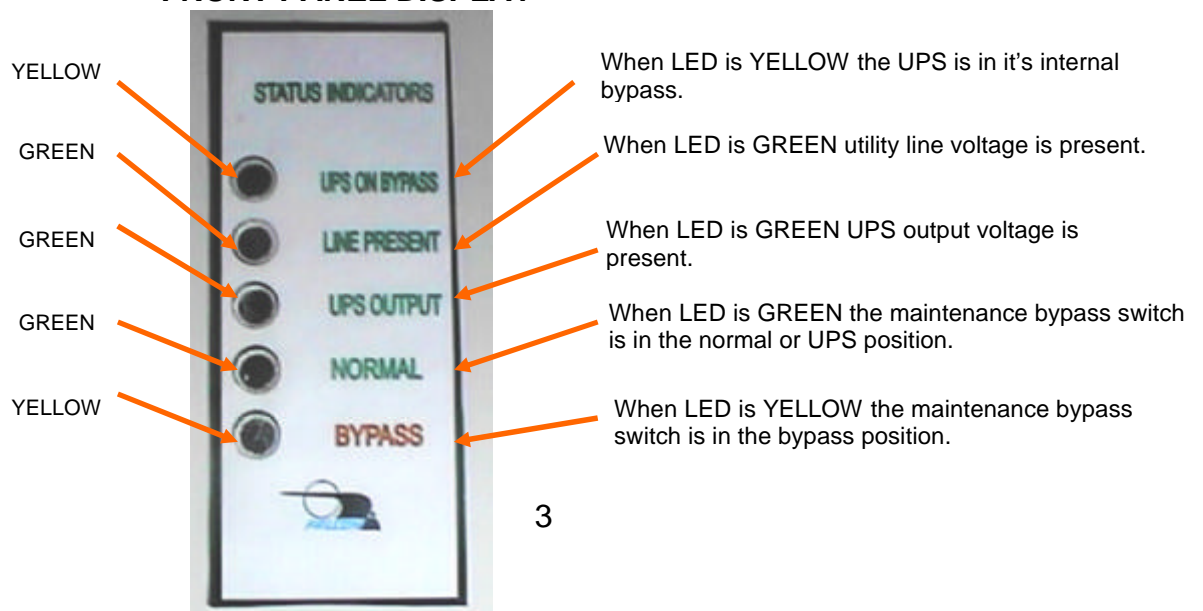
**The SG Series Maintenance Bypass Option is supplied with a mating receptacle and plug on a six-foot line cord facilitating easy UPS removal and reinstallation.**

## Features

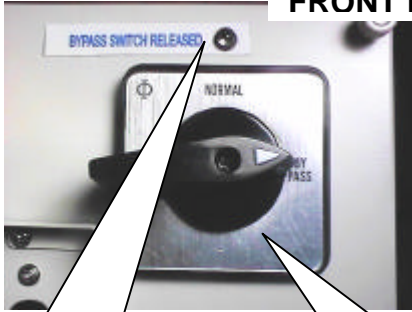
- Provides an easy method of removal and reinstallation of an SG Series UPS without disruption of the connected load.
- Safety lockout prevents improper operation
- Designed specifically for the SG Series UPS
- LED status display
- Compact Size, Lightweight
- Wall Mountable
- Hardwire input/output,
- UPS interface uses standard plug & receptacle for ease of removal and installation.
- Two-Year Warranty

## FRONT PANEL DISPLAY AND CONTROLS

### FRONT PANEL DISPLAY

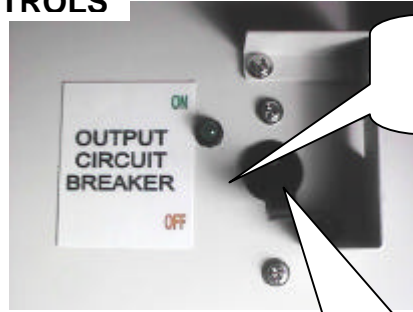


## FRONT PANEL CONTROLS



When Blue LED is lit the Normal/Bypass switch is unlocked and may be actuated.

Maintenance Bypass Switch with user lockout



Bypass Box Output is Present when Green LED is lit.

Maintenance Bypass Output Circuit Breaker

## BOTTOM VIEW OF ELECTRICAL CONDUIT KNOCKOUTS



## RIGHT SIDE VIEW



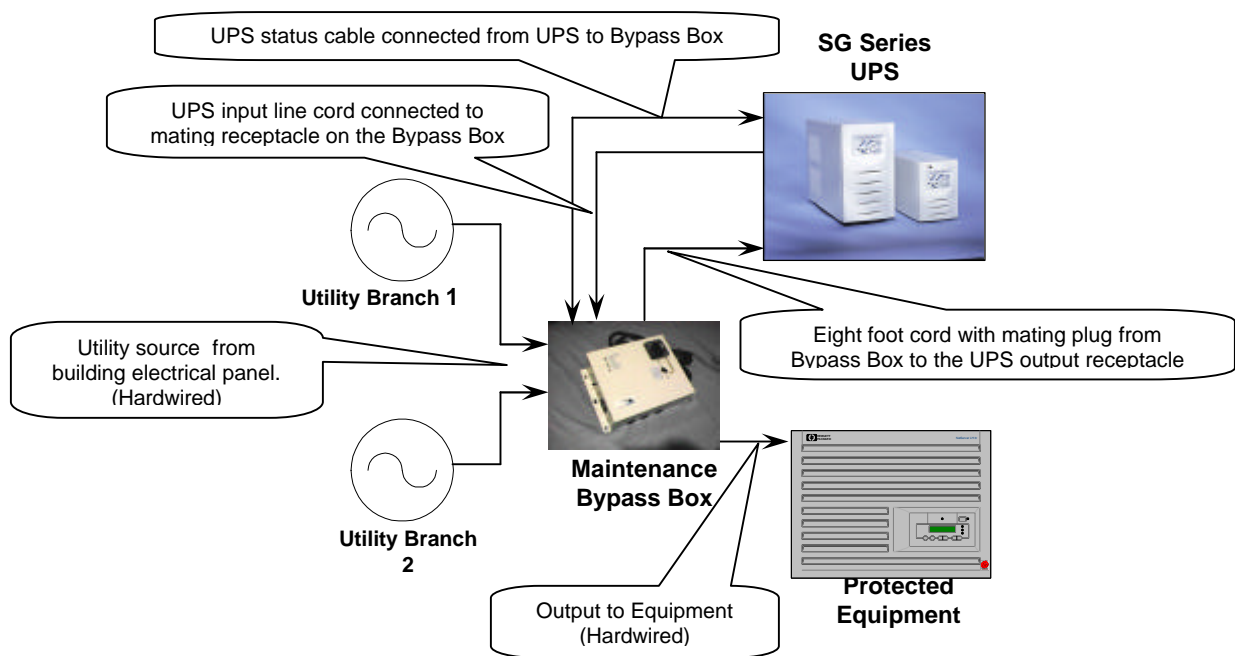
Line cord and plug to UPS outlet (STEP 11)

## LEFT SIDE VIEW



Sense cable to UPS sense connector (STEP12)

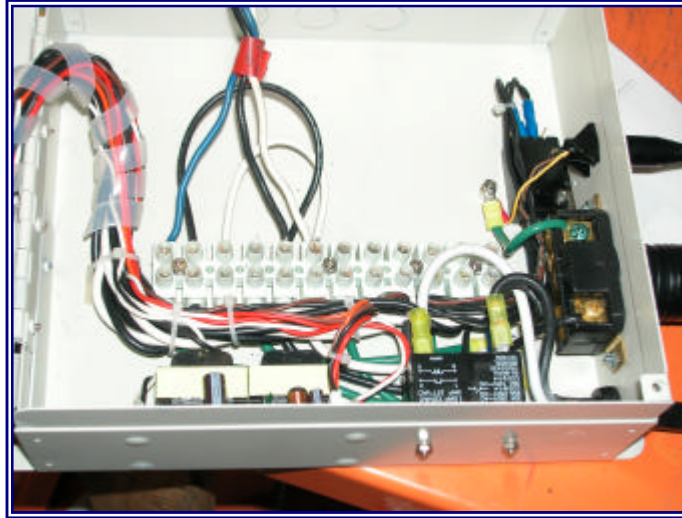
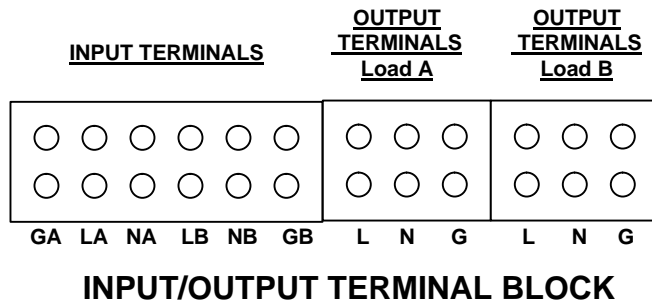
Receptacle for UPS input power plug (STEP 10)



**TYPICAL SYSTEM CONFIGURATION DIAGRAM**

**INSTALLATION INSTRUCTIONS**

- Step 1: Mount the Maintenance Bypass Box within five feet of the SG Series UPS using the six keyhole mounting slots provided.
- Step 2: Remove the four screws securing the box front panel.
- Step 3: Lower the front panel to gain access to the utility input and load output hardware terminal block
- Step 4: Install electrical conduit between the maintenance bypass enclosure and the input voltage supply electrical panel. A dedicated 30A branch rated circuit breaker must be installed in the electrical panel as a protection device for the maintenance bypass.
- Step 5: Install electrical conduit between the maintenance bypass box and the connected equipment. A 30A output circuit breaker is provided on the bypass box front panel for protection of the connected load.
- Step 6: Run 10 Awg, 600V UL rated wire (Line, Neutral and Ground) from the electrical panel to the bypass box. Note that two sets of input terminals are available (A & B) allowing for connection of separate inputs from two branches of the same phase. If this feature is not required, connect input wiring to input A and install a Black 10 Awg. jumper wire between LA (line A) to LB (line B) and another white 10 Awg. jumper wire between NA (neutral A) to NB (neutral B).



**CAUTION**

To reduce the risk of fire, connect only to a circuit provided with overcurrent protection incorporating a 30 Amp maximum "branch rated" circuit breaker in accordance with the National Electrical Code, ANSI/NFPA 10.

Step 7: Run 10 Awg., 600V, UL rated wire (Line, Neutral and Ground) from the bypass box "Output" terminals to the connected equipment.

**ONLY USE WIRE WITH SOLID COPPER CONDUCTORS FOR ALL INPUT/OUTPUT WIRING**

Step 8: Using the terminal torque specifications provided, tighten the terminal block screws as specified.

<b>SCREW TORQUE SPECIFICATIONS FOR INPUT/OUTPUT WIRING BLOCK</b>	
Wire Gauge	Torque (pound inches)
18 - 10 Awg.	20
8 Awg	25

- Step 9: Reinstall the maintenance bypass box front panel using the four screws removed in step 2.
- Step 10: Connect the UPS input plug to the receptacle provided on the left side of the bypass box.
- Step 11: Connect the Bypass Box UPS output cord plug to an output receptacle on the UPS.
- Step 12: Connect the supplied UPS sense interface cable between to the UPS remote sense connector and the bypass box sense connector.

The Remote Maintenance Bypass Box is now installed and ready to test.

### **INITIAL CHECK OUT AND TEST PROCEDURE**

**IMPORTANT!** The electrician installing the maintenance bypass box must perform the following testing. The procedure is given for verification of proper system operation; including the maintenance bypass box, UPS and interconnecting wiring. Failure to perform this testing may result in damage to the UPS, maintenance bypass box or interruption of the critical load.

- Step A. Preliminary setup
  1. Verify the UPS input circuit breaker is in the off position.
  2. Verify the output circuit breaker on the maintenance bypass box is in the off position.
  3. Verify the connected load is turned off.

- Step B. Input verification.
  1. Turn on the dedicated 30A circuit breakers at the electrical panel.
  2. At the maintenance bypass box display panel the following indicators should be on:

LINE  
NORMAL

NOTE: Should the above indicators not be on please check the input wiring and circuit breakers.

3. Using an AC voltmeter, verify there is no voltage at the input of the connected load.
4. Turn on the output circuit breaker located on the maintenance bypass box.
5. Again. using an AC voltmeter, verify there is no voltage at the input of connected load.

- Step C. Bypass switch lock-out verification test.
  1. Gently attempt to switch the Normal/Bypass switch from the “Normal” position to the “Bypass” position. The switch should be locked and **you should not be able to move it to the bypass position at this time.**

Step D.

UPS input test

1. Turn the maintenance bypass output circuit breaker to the “off” position.
2. Turn the UPS input circuit breaker to the “on” position.
3. Wait for the UPS to power up and go to the “inverter” state (UPS inverter indicator LED on and bypass indicator off)
4. Look at the maintenance bypass status display and verify the following indicator LEDs are on:  
LINE  
UPS  
NORMAL
5. Turn on the maintenance bypass output circuit breaker.
6. Using an AC voltmeter verify the proper nominal output voltage is present at the input of the connected load. **DO NOT TURN ON THE CONNECTED LOAD AT THIS TIME!**

Step E.

UPS to Maintenance Bypass status signal & bypass tests.

1. On the UPS control panel depress the ON/OFF (bypass) switch for one second.
2. Verify the UPS transferred to bypass. (Bypass LED on and Inverter LED off)
3. On the maintenance bypass status panel verify the following LED indicators are turned on:  
BLUE “BYPASS SWITCH RELEASED” LED  
UPS BYPASS  
LINE  
UPS  
NORMAL
4. Switch the Normal/Bypass switch located on the bypass box to the “Bypass” position. The switch should be unlocked and turn freely while switching to the bypass position.
5. On the maintenance bypass status panel verify the following LED indicators are turned on:  
BLUE “BYPASS SWITCH RELEASED” LED  
UPS BYPASS  
LINE  
UPS  
BYPASS
6. Using an AC voltmeter verify the proper nominal input voltage is present at the input of the connected load.
7. Switch the Normal/Bypass switch back to the “normal” position
8. Depress the UPS ON/OFF (bypass) button for one second.
9. Verify the UPS returned to inverter operation.

Step F1.

UPS battery mode operation verification. (single branch connection))

1. Turn off the dedicated 30A circuit breaker for this input at the electrical panel.
2. Look at the UPS status panel and verify the UPS is in battery mode.
3. Using an AC voltmeter verify the proper nominal input voltage is present at the input of the connected load.
4. Turn on the dedicated 30A circuit breaker for this input at the electrical panel.



5. Verify that the UPS line and inverter LEDs have turned back on.

Step F2.

UPS battery mode operation verification. (dual branch connection)

1. Turn off the dedicated 30A circuit breaker for the input in step F1 and this input at the electrical panel.
2. Look at the UPS status panel and verify the UPS is in battery mode.
3. Using an AC voltmeter verify the proper nominal input voltage is present at the input of the connected load.
4. Turn on the dedicated 30A circuit breaker for this input at the electrical panel.
5. Verify that the UPS line and inverter LEDs have turned back on.

Step G.

Load Test

1. If all previous tests have passed, turn on the connected load.
2. Using an AC voltmeter verify the proper nominal input voltage is present at the input of the connected load.

Step F.

Repeat steps “E, F1 & F2” and verify the connected load operates correctly and without interruption.

## **OPERATING INSTRUCTIONS**

### **How to put the system into maintenance bypass mode.**

1. On the UPS depress the ON/OFF (bypass) for one second to place the UPS into bypass mode.
2. On the maintenance bypass box turn the Normal/Bypass switch to the “Bypass” position.

### **How to remove the UPS for maintenance or servicing.**

1. Put the system into maintenance bypass mode.
2. Turn off the UPS by turning off the input circuit breaker.
3. Disconnect the UPS input plug from the maintenance bypass box.
4. Disconnect the maintenance bypass plug from the output receptacle of the UPS.
5. Disconnect the UPS sense cable from the rear of the UPS.

**NOTE: The Normal/Bypass switch cannot be switched back to the “Normal” position with the UPS disconnected.**

### **How to reconnect a UPS to the system.**

1. Reconnect the UPS sense cable to the mating connector located on the rear of the UPS.
2. Reconnect the maintenance bypass plug to the UPS output receptacle.
3. Reconnect the UPS input power plug to the maintenance bypass box.
4. Turn on the UPS input circuit breaker.
5. After the UPS has powered up and is in “Inverter” mode. Depress the ON/OFF (bypass) switch for one second and put the UPS into bypass.
6. On the maintenance bypass box, turn the Normal/Bypass switch back to the “Normal” position.

7. Again depress the ON/OFF (bypass) button on the UPS for one second to return the UPS back to "Inverter" mode.

## **PREVENTIVE MAINTENANCE**

If installed properly in a controlled environment the Falcon Maintenance Bypass will not require periodic maintenance and will provide many years of worry free service.

## TECHNICAL SUPPORT AND SERVICE

All SG series products are backed by one of the finest customer service teams. Write, call, fax or email should you require technical assistance or service.

**FALCON ELECTRIC INC.**  
5116 Azusa Canyon Road  
Irwindale, CA. 91706  
Voice (626) 962-7770  
Fax (626) 962-7720  
Service (800) 842-6940  
Email: [service@falconups.com](mailto:service@falconups.com)

Should service be desired, you must first obtain a Return Material Authorization number (RMA) and shipping instructions from our customer service department. Please have your SG Series model and serial numbers on hand prior to the call. This information is located on the identification label on the rear panel of the unit. The information is essential in retrieving your unit's history records.

The RMA number issued must appear on the outside of the shipping carton. The original shipping container must be used when returning any SG Series product. Falcon Electric will not assume any responsibility for shipping damage. In the event of shipping damage the customer will be charged for repairs due to the damage.

Except for the terms outlined in the following warranty, all units must be returned prepaid. The service center address and shipping instructions will be given to you at the time the RMA is issued.

# WARRANTY

## GENERAL PROVISIONS

FALCON® ELECTRIC INC. hereby warrants product shipped under this agreement to be free from defective workmanship for a period of Two Years following date of shipment. This Limited New Product Warranty Agreement only applies to covered repairs to the product occurring within the United States and Canada.

## EXCLUSIONS:

The following are not covered by the Falcon Electric Limited New Product Warranty.

1. **DAMAGE DUE TO ACCIDENTS, FRAUD, INTENTIONAL NEGLIGENCE, MISUSE, IMPROPER INSTALLATION, UNAUTHORIZED ADJUSTMENTS, MODIFICATION, ALTERATIONS, DISCONNECTION, TAMPERING:** Accidents or acts of nature or other events beyond the control of Falcon Electric, damage from impact, contaminants, fire, or water, misuse of the product such as sustained overloading, improper installation or operation, operation in an un-controlled environment.
2. **DAMAGE DUE TO IMPROPER INSTALLATION OR LACK OF MAINTENANCE:** Lack of proper maintenance as outlined in the owner's manual.
3. **NORMAL MAINTENANCE:** Cleaning, replacement of leaking or outdated batteries.
4. **DAMAGE DUE TO ALTERATIONS:** Alterations by changing or adding to the product by any unauthorized personnel or service organization.
5. **DAMAGE CAUSED BY OTHER THAN ORIGINAL EQUIPMENT PARTS.** Any malfunctions caused by the use of other than Falcon Electric original equipment parts such as batteries, line cords and plugs, output receptacles, or any other part.
6. **BROKEN OR TAMPERED WARRANTY SEALS:** Falcon Electric will deem all warranties null and void in the event warranty seals are broken or show signs of removal or tampering.
7. **CONSEQUENTIAL DAMAGES:** This Limited New Product Warranty does not cover any consequential or secondary damages that may be suffered as a result of usage of the product or the need to repair or replace a warranted part except to the extent coverage of such damage is required by the state whose law governs the Falcon Electric Limited New Product Warranty.
8. **REPAIRS BY UNAUTHORIZED SERVICE ORGANIZATIONS OR PERSONNEL:** Otherwise covered repairs when the prescribed repair is not performed by the Falcon Electric Service Center or by a Falcon Electric authorized third party service organization.
9. **LIABILITY FROM USE OF THE PRODUCT:** Liability for damage to property or injury or death of any person arising out of the operation, maintenance, or use of the product.
10. **Warranty void if the battery is allowed to discharge below the minimum battery cutoff point. The battery must be recharged every three to four months when not in use.**
11. **This product is not recommended, and Falcon Electric Inc. will not knowingly sell this product, for use with life support and other designated "critical devices". ANY SUCH USE BY A USER AUTOMATICALLY VOIDS AND DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND EXPRESS WARRANTIES THAT THIS PRODUCT WILL CONFORM TO ANY AFFIRMATION OR PROMISE, FOR THIS PRODUCT AND THE USER AGREES THAT IN NO EVENT SHALL FALCON ELECTRIC INC. BE LIABLE FOR CONSEQUENTIAL OR INDIRECT DAMAGES.**

## LIMITS OF LIABILITY:

**LIMITATION OF LIABILITY:** THERE IS NO LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE UNDER THESE WARRANTIES 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 BE RESPONSIBLE FOR ANY AMOUNT EXCEEDING THE ACTUAL MARKET VALUE OF THE PRODUCT. Some states do not permit the exclusions of limitations of incidental or consequential damages, so these limitations may not apply to you.

## TRANSFER:

This Falcon Electric Limited New Product Warranty is not transferable in the event of the product ownership being transferred during the warranty coverage period.

## ITEM COVERAGE:

Effective January 1, 2000 FALCON® ELECTRIC INC. hereby warrants product shipped under this Agreement to be free from defective workmanship for a period of two years following date of shipment. Coverage under this Falcon Electric New Product Warranty Agreement commences with the date of shipment defined as the date on the Bill of Lading. If no Bill of Lading is issued the date of shipment shall be shown on seller's shipping document. The Falcon Electric Limited New Product Warranties expire two years from the aforementioned commencement date. Falcon Electric Inc. reserves the right to make changes, additions, and/or other improvements in its products without incurring any obligation to install them on its products previously sold. This Warranty is valid for product as sold.

1. For product located in the continental United States and Canada deemed by Falcon Electric Inc. to be covered under this warranty, Falcon Electric will pay shipping costs associated with the return and repair of product under the following conditions only:
  - a. Falcon Electric will pay shipping costs both to and from our US Service Center for the first 30 days from the original date of invoice. During this 30 day period Falcon Electric may elect to ship a new unit to replace the defective product.
  - b. After the first 30 days and up to 90 days from the original date of invoice the end-user is responsible for shipping costs associated with sending the defective unit to the Falcon Electric US Service Center. Falcon Electric will pay shipping costs associated with returning the repaired product to the end-user. During this 60 day period Falcon Electric may elect to offer a loaner unit, providing the end-user agrees to pay for all shipping costs associated with transportation of the loaner unit both from and return to the Falcon Electric US Service Center.
  - c. All shipping costs for product submitted beyond 90 days of the original date of invoice is the responsibility of the end-user.